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Addiction Research Foundation

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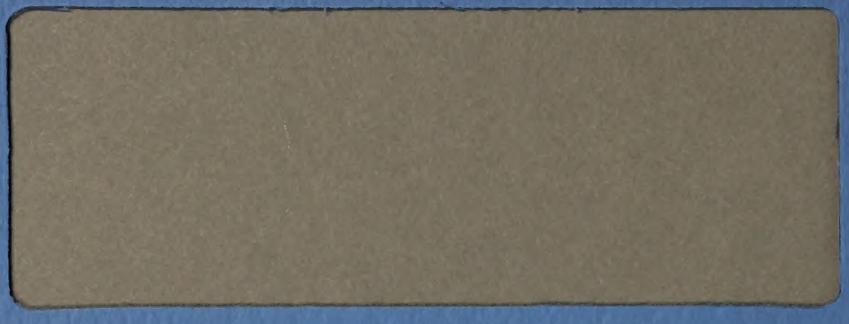

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Perspectives on the Impaired Driver and a Recommended Program

by

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SUMMARY

Alcohol involvement has been implicated in some 50% of fatal traffic accidents, and a large number of less serious ones. It is also a frequent cause of erratic driving resulting in traffic violations of various kinds. The effects of alcohol on driving have been studied in actual driving situations, in apparatus which simulated driving, and in laboratory tests of the effect on a particular skill(s) related to driving. Not everthing is known yet, and there is a good deal of controversy, particularly over the effects at low B.A.C. levels, but certain things seem fairly established. Every person, regardless of drinking and/or driving experience, shows decrease in skills at levels of .10% and above; additive effects have been demonstrated for alcohol combined with various drugs and with certain medical conditions. Alcohol has been demonstrated to have a direct effect on perception, particularly vision, which it distorts in a number of ways, and on various effector muscles. It also alters higher mental processes such as decision-making and risk-taking in complex ways. An interaction between alcohol and personality has been demonstrated. Results of recent research on multi-task information-processing suggest that significant though non-visible detrimental effects begin at lower B.A.C. levels than has been thought up to this time. No substance now known can offset the impairment of driving skills caused by alcohol.

Although little is known about the occurrence of alcohol-related collisions, it is fairly well agreed that they happen most often at night, and disproportionately on the weekends. A little researched but essential piece of information for anyone planning countermeasures

is whether or not it is feasible to plot the distribution of alcohol-related traffic incidents in the particular city and perhaps find areas in which it is particularly prevalent.

One major area of renewed controversary is the question of whether it is possible or necessary to differentiate high-risk drivers from the social drinking group. At this point it seems as if there is more than one high-risk group; a high score on a frequency/quantity index, a history of contact with social agencies, and a long offence record (including various moving traffic violations) seems characteristic of one such group. Youthful drivers with low B.A.C. levels are another; they are in sharp contrast with the majority of offenders who tend to fall in the middle age ranges and to register very high levels. So far, the evidence on the possibility of distinguishing between social drinking drivers and high risk drivers on the basis of other characteristics remains ambiguous, although one particular psychological syndrome centering on dependence seems promising.

The situation in Ontario has been little explored, although Department of Transport and Information Canada Statistics suggest that alcohol's contribution to accidents here is steady and is roughly proportional to its contribution in the United States.

Philosophical, factual and ethical considerations enter into the planning of any program in this area, and co-ordination of efforts by interested parties is needed. Of the approaches to date: "correction", (i.e. a system of progressive fines, licence suspensions, and jail in repeated offences) is a failure; enforcement, when well thought-out and

highly publicized, is effective up to a point; the attempts to build into a car some device to prevent or hinder impaired driving have to date been unsuccessful for various reasons; public education programs have little direct effect. Existing programs have had trouble finding proper evaluative measures; some, notably, some ASAP Programs, the Phoenix Program and the British Road Safety Act, have convincingly demonstrated some success. The approach of choice at this time appears to be locale-specific research to establish the needed informational background, followed by a streamed program utilizing a re-educational approach co-ordinated, when necessary, with combined therapy (medical, psychological, psychiatric, social work), probably again differentiated as to sub-groups (e.g., alcoholics, persons with significant psychopathology).

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PERSPECTIVES ON THE IMPAIRED DRIVER AND A RECOMMENDED PROGRAM

Introduction

Questions of how and under what circumstances people get from one place to another are related to the geographical arrangement of these places. In the western world two concurrent general trends seem to have occurred: space has expanded, and space has contracted. The contradiction is only illusory, for the different respects in which the geographical environment has expanded and contracted when taken together tend to have the same overall result. Space has expanded in that an increasing percentage of the population now lives in cities rather than in small communities, so that the physical distance to which they require access, if they are to reach goods, services, friends and relatives, is greater than it once was. Space has contracted in the sense that travel between towns and cities, even across continents, has become less unusual and, in some instances, more necessary. Thus, both trends together make this the age of the automobile, a means of transportation which allows the individual to serve his own particular needs relative to the geographic arrangement of his environment while simultaneously gratifying other needs, e.g. for status, symbolic self-expression, independence, etc. But the automobile as a solution to a complex of problems has brought along some of its own, one of the most vexing of which is the traffic accident. Road design, demographic variables, driving patterns, different levels of driving skill, safety devices in cars, community mores, speed limits, time of day or night, local laws -- all these and other influences, in some fashion,

determine the probability of a particular driver having an accident at a given time and place. In view of the number of factors and the complexity of their interacting influences, as well as the amount of traffic on the road, it perhaps should not be surprising that so many accidents do occur. Still, we are outraged, particularly by the fatal ones, in which human potential is destroyed so senselessly. Then we find that out of the multiplicity of possible influences, one, alcohol, stands out, appearing as a causal factor in approximately fifty per cent of fatal accidents. The quantities consumed and other evidence suggests that the drivers involved are not merely following normal social drinking patterns. Medical and psychological literature suggests that alcohol significantly impairs several ranges and levels of driving-related skills. It thus seems justifiable to take a long, hard look at the drinking driver to see what might be done to get him off the road or discontinue his driving-after-drinking pattern. This report attempts to summarize the relevant knowledge and major issues as of this date: It examines the evidence on the risk represented by impairment, the characteristics of the high-risk driver, and what is known about the problem in Ontario. There follows a description and evaluative summary of the different kinds of attempts that have been made to deal with the situation, a discussion of the gaps in knowledge and resources, which must be filled before a sophisticated program can be designed, and finally presents program recommendations.

The Driving Risk Represented by the Impaired Driver

A. Alcohol and Accident Involvement:

Human behaviour which deviates from normative standards is especially problematic for a democratic society which values minimal restrictions on what people do. Thus, areas such as pornography, mass media portrayals of explicit sex and violence, etc. have given rise to ongoing controversy as to whether society has any right to intervene in them and to what extent. One question asked by the United States Supreme Court in deciding some of these issues is whether there is "a clear and present danger" to society or some group or institution within it stemming from the behaviour. This appears to be a reasonable yardstick to apply in determining society's responsibility regarding the impaired driver, for there are universally acceptable indices of "danger" in the traffic field: crashes and their sequelae.

In this respect, the Alcohol and Highway Safety Report of 1968 states flatly (page 15) that:

> " Scientific investigation of actual crashes and the circumstances in which they occur and laboratory and field experiment show very clearly that the higher the driver's blood alcohol concentration: - The disproportionately greater is the likelihood he will crash; - The greater is the likelihood that he himself will have initiated any crash in which he is involved; and - The greater is the likelihood that the crash will have been severe. "

The data, in certain respects seems unequivocal: McCarroll and Haddon comment (page 183) on the fatal accidents they studied in New York City:

> " Among drivers rated as probably responsible for their accidents, 73% had been drinking to some extent . . . 46% of the accident responsible group had blood alcohol concentrations in the very high, 250 mg. % and over, range. In contrast, not a single one of the drivers in the large control group had a concentration in this range. "

The authors of the Grand Rapids roadside survey summarize their findings:

> " Blood alcohol levels over 0.04% are definitely associated with an increased accident involvement. The probability of accident involvement increases rapidly at alcohol levels over 0.08%, and becomes extremely high at levels above 0.15%. When drivers with blood alcohol levels over 0.08% have accidents, they tend to have more single vehicle accidents, more severe (in terms of injury and damage) accidents, and more expensive accidents than similar sober drivers. " (Dale, editor, page XVII)

A recent study by Perrine and associates in Vermont found that:

> " Among driver fatalities, 54% had alcohol, and 42% had 100 mg. % or greater. "

Studies in different places, at different times, using different populations and controls, have shown findings pointing closely in the same direction (for example, see Caldwell, 1965). Thus, somewhere in the vicinity of 50% of fatal accidents appear to involve a driver who had been drinking, usually to the point of registering quite high B.A.C. levels (.10% and above). The proportion is naturally greater for single vehicle crashes than for those in which several vehicles were involved, as the involvement of more than one vehicle usually means that one or more drivers is relatively blameless.

As we come to consider less serious accidents, those in which minor damage was done and no one hurt, we find that alcohol shows up much less often as a causative factor. However, we must add the priviso that much greater care is taken to establish the cause of an accident in which someone was killed than one in which a fender was damaged, so it may be that some number of alcohol-involved drivers in minor accidents remain undiscovered as such. Further, since less serious accidents are far more numerous than those with fatalities and serious injury it follows that even though alcohol is involved in a small percentage of them, the absolute

number of alcohol-related minor accidents is quite large (the National Highway Safety Bureau of the United States estimated that alcohol played a role in at least 800,000 of the approximately 14,000,000 run-of-the-mill crashes occurring there each year).

B. Alcohol and Traffic Violations:

The foregoing figures were obtained by comparing the incidence and levels of alcohol in accident-involved drivers and non-accident-involved drivers of equal risk. We might also question the relationship between alcohol and traffic violations, as a violation which did not on a particular occasion produce an accident is nevertheless presumably riskier than ordinary safe driving. Here we find a rather complex set of circumstances. The indices used by the police to determine which cars to stop on suspicion of alcohol-impaired drivers are roughly measures of erratic, unusual driving actions,[1] which suggests that the police experience has taught them that violations are often alcohol-linked. In the overwhelming majority of instances in which a person stopped for some violation is given a chemical test for alcohol, the test registers not only positively, but at a high level. Often, then, such cases result in the laying of a driving-while-intoxicated or similar charge. But what of the low B.A.C. violator? First the visual and behavioural tests used by the police for determining drunkenness are gross ones (see Utah manual) which means not only that they are less likely to appear in low B.A.C. drivers, but that their interpretation may be variable: in fact, some evidence has been offered

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[1] A listing of such indices may be found in The Drinking Driver, a manual for Utah law enforcement officers.

to suggest that even clinical examination of a person by a physician may not be a reliable means of determining whether the person has been drinking (Waller, 1968). Thus, it is likely that the alcohol involvement in some remains unnoticed. It is further possible that in some cases an officer will decide to "give the guy a break" and not proceed to test for alcohol, though he suspects its presence, laying only the less serious charge relating to the specific violation.[2] All of this together suggests that it is difficult to ascertain the extent of the contribution of alcohol to minor traffic violations.

Sources of Heightened Risk for Impaired Drivers

A. Methods of Study:

If alcohol is implicated in a large percentage of serious accidents, the logical next step is to ask: Why? For to know that some 50% of fatal accidents involve drivers registering high B.A.C. levels does not tell us whether the effects of the alcohol itself are enough to account for this high risk or whether the risk and the high B.A.C. level are themselves both due to some third factor. Other questions come to mind here as well. Is it possible that some people can drive at high B.A.C. levels without being substantial accident risks? Can some behavioural or chemical precaution compensate for the effects of alcohol, allowing the person to drive while just as drunk without the heightened danger of serious accident? Might road or vehicle design attenuate some of the effects of alcohol? What medical and psychological evidence can be marshalled in

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[2] There are a number of reasons for police reluctance to charge drivers with the comparatively serious alcohol-related offences rather than with specific traffic infractions which make no mention of alcohol (Zylman, 1970).

support of the contention that a specific B.A.C. level regardless of the individual manifesting it, is or is not a high risk?

There are three basic ways in which such questions can be examined, each of which has its advantages and disadvantages. One alternative is actual road tests, in which a person drives a car through an arranged set of obstacles, intersections, etc. Also used are simulated road tests, in which an apparatus resembling a car or part of a car is to be manipulated (e.g., person has to "steer" along a filmed moving roadway). Finally, there are laboratory experiments, in which a task directly or analagously related to those pertinent to driving is performed both with and without alcohol. The actual road tests, by the very reason for the research interest, the danger of impaired driving, are limited in what they can do (e.g., you can not send subjects with high B.A.C. levels out into actual traffic) and hence an element of unreality enters as testing at high levels must take place not on roads or highways but over a prepared course. The drivers are motivated to perform well because they know they are being observed, perhaps particularly motivated to perform well in the with-alcohol trials; often both drivers and judges know alcohol trials from non-alcohol trials. Further, despite the fact that this driving task is limited in nature by its location on a prepared course, the complexity of driving per se is such that it is difficult to choose the best focal points on which to base judgement of impairment. Many such studies have therefore settled for very gross indices (e.g., knocking down of pylons), although this latter situation has been somewhat improved in more recent experiments by the introduction of electronic monitors of

fine sensor and effector movements.

The simulated driving studies usually zero in on one or a few specific tasks and these in great detail, but tend to divorce them from a total driving context and the level of unreality is rather high. Lastly, the laboratory tests allow the most precise measurements of particular tasks and skills, but in the context most removed from actual driving, which means not only that the unreality for the subject is greatest, but also that the experimenter has to leap the greatest real distance to analogize his findings to an actual driving setting. All three methods of study share certain problems such as the difficulty of performing double-blind experiments and the confounding of results with a "practice" factor, almost inevitable in that if people are not used as their own controls, which means that they perform the same tasks in both sober and alcoholic conditions, different results may be due to different results may be due to different levels of skill rather than to the effects of alcohol. Nevertheless, replication of findings, sometimes through experiments using different methodologies and advancing levels of sophistication, have made certain things appear relatively unequivocal as of this date.

B. Additive Effects of Alcohol and Other Factors:

The U.S. Department of Transport (1968) states:

> " At or above the blood alcohol concentration limit of 100 mg. per 100 ml. (0.10% by weight) . . . the driving performance of all individuals is degraded. " (page 43)

This means that regardless of habitual drinking patterns, whether or not the person is a frequent, heavy drinker, he is less efficient at this level

than when sober. Dr. Roberts comments (page 429) that:

> "This tendency (towards worsened driving performance for persons with alcohol) may be compounded by additional features -- for example, visual disturbances, pathologic drowsiness, slowed reflexes, severe hypoglycemia, and withdrawal epileptiform dyrhythmias in the 'hangover state'."

In other words, the effects of alcohol and any of these conditions is additive, i.e. the impairment due to the condition itself is increased on alcohol ingestion by the amount of impairment which alcohol alone would cause. Also additive are the effects of alcohol and some drugs (see Forney).[3] Barbiturates particularly have been shown to have additive effects with alcohol, and there are some claims that the effects may even be potentiated, i.e. greater in combination than the sum of the two separately; Forney reports similar effects with various tranquillizers.

C. Physiological Effects:

We turn now to the direct effects of alcohol; one of the most researched and crucial areas in this respect is that of vision; it has been demonstrated that at high levels of alcohol ingestion visual acuity is sharply reduced, through nystagmus (irregular bouncing of the eyes while attempting to "track" in a straight line), slowed pupillary light reflex and reduction of binocular functioning. The rather frightening results are reductions in the ability to: judge distances, distinguish colours, resist glare, and generally see well at night; perhaps worse are the possibility of double vision, the blurring of images caused by

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[3] Carpenter is critical of the methodology of many of the studies in this area and points out that a demonstrated effect for a particular dose of alcohol combined with a particular dose of another drug does not necessarily mean that the same effect exists for all possible combinations of dosages.

the reduced colour vision and dramatic reductions in peripheral vision and visual field (A.M.A. undated; Simpson Crawford, 1971). A variety of other experiments reported by Roberts demonstrate other physiological deterioration (e.g., tightness of neck musculature making rotation of the head more difficult) and a significant increase in performance errors (e.g., involving accelerator, brakes, signal, and speedometer) in the alcohol condition. These findings seem to be inevitable for high B.A.C. levels; there are a number of discrepant findings at lower levels, a phenomenon which causes certain researchers to feel that below a certain B.A.C. level effects are subject to individual variance, but past that level all are effected negatively. Roberts, 1971, (page 441-442) reports on several studies which demonstrate increasing deterioration in musculature performance and reaction time with increased alcohol ingestion, and "profound changes in conduct and performance that could not be detected by external observation" e.g., uncertainty, erratic and uncoordinated driving. (Similar effects on professional drivers who negotiate an arranged course both before and after drinking are shown in the film "Point Zero Eight".) The question of visibility of effects is pertinent to the conflict over whether alcohol at low levels of ingestion has any but negligible influence on driving, as it may be that the low visibility effects occur at low levels of ingestion and are, perhaps, as or even more serious than the more obvious behavioural changes.

D. The Higher Mental Processes:

The latter studies have taken us beyond the question of perception and action to that of the higher mental processes which co-

ordinate them. There is, particularly, some interesting data on processes such as decision-making, specific factors such as risk-taking (Cohen, Dearnaley & Hansel, 1964; Drew, Colquhoun & long, 1964) and the interaction of alcohol and personality. Several recent experiments on decision-making reviewed by Roberts indicate concomitant decrement in decision-making and in performance; the A.M.A. (1968) reports the results of a large number of studies, only two of which suggested no deterioration of the particular driving skill and/or decision-making element(s) tested; both of these latter tested only at relatively low B.A.C. levels. The experiment by Drew and his associates is particularly interesting, as it demonstrated a relationship between the effects of alcohol and the subjects' scores on a number of scale measuring introversion-extroversion. Both introverts and extroverts showed effects, and the specifics are perhaps less important than the general lesson, which is that there is no one-to-one relationship between B.A.C. and driving-related performance, as a lot of other determinants intervene. Important amongst these, the medical experts persistently point out, are individual differences in susceptibility to the various effects, something which turned up frequently in the experiments reviewed by Roberts and the A.M.A. Report. This brings us to the question of legal limits. If, as seems to be the case, any given B.A.C. as a legal limit is a sort of implied mean of the B.A.C. levels at which particular skills deteriorate, as seems to be the case, and of the levels at which particular groups of drivers suffer impairment, as also seems the case, rather than an absolute threshold applicable to all skills and all drivers, it is possible to simultaneously argue that the limit should be raised (to be fair to drivers unimpaired at the present limit) and

lowered (to protect society from the drivers impaired at the lower levels). Perhaps decisive in this respect is the recent work by Herbert Moskowitz and his associates, (1972), who worked on the premise that emphirical studies showing no decrement in performance at low B.A.C. levels might be an artifact of experimental designs which asked the subject to pay attention to a single, simple sensory input. They felt that small amounts of alcohol might strike not at the perceptual level but at the information-processing which follows perception and proceeds action. They therefore increased complexity of sensory input and divided subjects' attention, and found that as a result significant performance decrement occurred at low B.A.C. levels. This argues that, objectively, there should be a redefinition in the legal limit; it should be noted that subjectively the individual driver would not experience any feeling of impairment at these levels, nor would he seem impaired to an observer, e.g. police officer. The difficulty of getting any kind of public support for a lower legal limit on these grounds is self-evident.

E. Antagonistic Substances:

Forney and others have examined the question of whether some chemical with effects antagonistic to alcohol might allow a person to drive after heavy drinking without being impaired. So far the only magic elixer discovered is . . . time! The only effects of alcohol which can be offset chemically appear to be the highly visible behavioural ones. not only are these not pertinent to driving, but their absence might serve to mask the degree of a person's impairment from police or other interested parties. Can a person compensate for the effects of alcohol on his driving?

It appears the answer is yes and no. Payne and Selzer (1962) found that non-alcoholic drivers reported that they were more cautious when driving after drinking than otherwise. Everyday logic argues that a person used to driving and drinking would know themselves in relation to these two activities and could modify their behaviour as needed. This is not true, however, of someone unused to both; and there is an absolute limit in any case: the literature seems in agreement that everyone shows at least some impairment at .10% or over.

Geographical, Regional, Temporal Profile of Occurrances of Alcohol Related Collisions

Odd as it may seem, it appears that no one has actually put together statistics which would allow a comparison between particular cities or regions in the United States or in this country as to the prevalence rates of impaired driving, alcohol-involved accidents, etc., against the factors peculiar to each locale. Most studies which have been done have been indepth examinations of one place at a time. Where comparison has been attempted, it has been limited to the level of demonstrating differing rates without asking what goes into producing the differences. Thus, it is not really clear whether rural or urban, small, medium, or large, heterogeneous or homogeneous communities have differing incidences, or what other factors are important here. As a result there is little in the way of general knowledge which might be utilized in the operationalized establishment of a baseline to study the problem in a particular community. Two factors are worthy of some discussion, the first one being time, because it has been fairly well researched. The second is intra-community distribution, because of its implications for enforcement.

A. Time of Day; Week; Month:

The findings regarding time are relatively clear-cut. Drinking driver accidents are predominantly a 9 p.m. to 3 a.m. phenomenon, in contrast to non-drinking driver accidents which occur most frequently at peak periods for heavy traffic (see Dale, et al, 1964, Table 11, page 208; U.S. D.O.T., pages 18-19); that this is also the time when serious and fatal accidents are most frequent is at least partially due to the heavy weighting of alcohol-related crashes. Despite their predominance in the evening and early morning hours, alcohol-related collisions seem to occur throughout the day, though their incidence between 6 a.m. and 6 p.m. is rather light (U.S.D.O.T., 1968, chapter 2, fig. 16, page 37). Though there are some differences of opinion as to the extent that this is so (D.O.T., pages 19-20) it is generally agreed that alcohol-involved collisions occur most frequently on weekends, particularly Saturdays, more so even than non-alcohol involved accidents, which are also heavy then. Shupe and Pfau (1966, page 75) report that in Columbus, Ohio, alcohol related arrests were most frequent on Saturday, and also heavy on Friday, Sunday and, for some reason, Tuesday -- their figures included both accident and non-accident DWI incidents. December was over-represented and January and the summer months under-represented in their study. In contrast, the Grand Rapids study found for all accidents that they were heaviest in both December and January. Shupe and Pfau suggest (page 73) quite reasonably that the summer decrease in urban areas may be due to the number of habitual city drivers who go away on vacation, and in support of this are able to point to an increase in liquor-traffic arrests for the Ohio highway patrol in

the summer months.

B. Distribution:

Shupe and Pfau found arrests to be evenly distributed throughout the seven precints of Cleveland. There exists some evidence to suggest that DWI violations occur when drivers are on their way out of the central city to the suburbs, but why this should be so is unclear, for if the Grand Rapids data is any indication, most accident-involved DWI's were drinking in their own homes and only 15% or so in a public establishment.

In any case, the arrangement of a community could be expected to interact with the reason for and preferred locale and time of an individual's drinking in determining the part of town in which he would be found driving while intoxicated. If he drinks with friends and they live in another part of town, if he drinks in taverns and there are none near his residence, the effect is obvious. If he drinks at home, the why and when of his drinking become predominant: someone drinking to forget a disappointment might seek an open highway which he could roar down; whereas, a person starting the day by drinking so that he could face a hated job would drive along whatever route would take him to work. This suggests that the sort of detailed breakdown of the characteristics of the community studied which Shupe and Pfau provide for Cleveland is a necessary step in understanding the nature of the drinking-driving problem in that community and the solution to that problem.

Characteristics of the Impaired Driver Population

A. Implications:

Most North American adults drink; most North American adults

drive. Obviously, there is considerable overlap between the two populations, and for a long time this was taken as a sufficient explanation for the DWI offender, i.e. he is the person from the large number of social drinking drivers who for idiosyncratic reasons or by chance happened to overdo it on a particular occasion. If the most accurate specification we can make about the DWI offender is that he belongs to this large, undifferentiated group, if any social drinking-driver might drive while intoxicated at any time, it follows that the focal point of any campaign against drinking-driver fatalities must be the combination of social drinking and driving. In other words, the ideal result of such a campaign would be that no one would drive after drinking. However, if the assumption that offenders represent a random sample of social drinkers is incorrect, policies based on this assumption would have several undesirable consequences. First the exhortation to ban all drinking and driving in order to prevent crashes would unnecessarily alienate the large number of social drinker-drivers from the aims of the program. By pointing an undeserved finger at them, linking them with those who cause the danger, it would reduce in general the credibility of the position against drinking and driving. Secondly, this position would tend to obscure the possibility of instituting effective preventive measures geared to the particular characteristics of a more specific identifiable problem group. Thirdly, and a sort of corollory to the second, measures based on an erroneous conception of the target group would be unlikely to succeed, e.g. something which might cause a social drinker not to drink before driving would not similarly effect someone whose drinking was compulsive.

B. Pertinent Arguments and Evidence:

For a long time, the "social drinker" assumption remained relatively unchallenged, and those who committed serious liquor-related driving offences were punished for not knowing better than to exceed the normal social drinking limits. In recent years, at the research level at least, there has been a swing to the position that there does exist an identifiable high-risk group which differs in various ways from the social drinker-driver and general driver population groups, and some efforts have been made to gear preventive and rehabilitative programs to the needs of the particular group involved. There is, however, a counter-argument to this position, based on either one of two stands: that there may in fact not be two distinct populations, a high-risk group and a social drinker group, but merely opposite ends of a continuum; or alternatively, that while a distinct subgroup does exist, it is not profitable to deal with the situation in terms of their supposed characteristics because: (1) no one has yet found a definitive, treatable "cause" for problem drinking; and (2) the incidence of serious accidents can be dramatically cut by introducing across-the-board enforcement measures which will cut down on all drinking and driving, both within and outside of this particular group.

In support of the first of these counter-arguments, it has been pointed out that if you draw the curve for the B.A.C. levels in the control group (i.e., non-accident-involved drivers) in the Grand Rapids

(roadside) study, you will see a large cluster at low B.A.C. levels and a small number at high levels; but the curve is unbroken. It might be then that we are dealing here with a single population. If there were two populations, should there not be a break in the curve at some point? Without one, the setting of a point above which the person is considered to belong to a "pathological" group would seem to be arbitrary. In other words, the drivers who because of accident involvement or erratic driving come to our attention may simply be drawn from the small proportion of social drinking drivers who exceed the normal quantity. There are, it would seem, two possible related answers to this. First, the unbroken curve doesn't of necessity indicate a single population; there could simply be two overlapping ones. Secondly, the argument rests on B.A.C. level alone, yet when other factors are considered, various indices of alcoholism and problem drinking are extra-ordinarily over-represented in drunk driver groups (Waller, 1965, pages 262-266). Perrine, et al, comparing accident with non-accident involved drivers in various control groups, summarize their findings thusly:

> "With only rare exceptions, however, individuals with no alcohol are much more similar to each other across all samples, and individuals with high alcohol concentrations in turn are much more similar to each other across samples, as opposed to the large within group differences between persons with no alcohol and those with high alcohol concentrations. " (page XXX)

This does seem to indicate that high-risk people (i.e., accident and violation-involved) drivers are from the same population as the high B.A.C. controls, but it doesn't necessarily support the "single population" argument, for it could be that most high B.A.C. drivers are high-risk,

and that those who turn up in control rather than accident groups in a roadside survey are different only in that on this particular occasion they were not showing notably erratic driving. We will no leave this question for the time being to return to it later with an intriguing possible reason why it's so hard to untangle; we also defer discussion of the argument that across-the-board measures to reduce drinking and driving are more efficacious than searching for treatable causes of problem drinking to the section of this paper on modes of treatment and their evaluation.

C. Characteristics of Drinking Drivers and the High-Risk Group Introduction:

We can now look at the work which seeks to delineate characteristics of a specific "high-risk" group. There are some provisos which must be kept in mind in accepting much of the following data as a true portrait of the high-risk drinking-driver. Many of the studies are simply based on a breakdown of characteristics of those arrested or convicted for alcohol and driving offences or drivers at fault in serious liquor-related accidents in a given jurisdiction over a given period of time, without any or adequate comparison to any population at large. To illustrate the trap this can lead us into, what conclusions can we draw from a report which tells us, say, that 60% of driving while intoxicated offenders were working-class females? Would not these conclusions be different if we found that 60% of the usual driving population in that locale were working-class females, than if that figure were 30%; or 90%? Also easier said than done is a good measure of the "average population"

for comparison purposes; as Richard Zylman (1972) points out even percentage of licence-holders in a given category may not be a satisfactory index, as it is contaminated by differential exposure (i.e., young licence-holders do more driving than elderly ones). Data based on police statistics is subject to the possibility of police bias, dealt with elsewhere in this paper at greater length. There is an expensive, painstaking but rewarding solution to most of these problems; take the research out in the field and do roadside surveys of the population at risk where it occurs, i.e.drivers in the same geographical and temporal locale as accident-involved ones. Zylman (September, 1971) points out that it is easy to over-generalize on the basis of the roadside studies performed so far. Each study used differently-defined accident and control groups and methods of study and hence is only valid in its own terms. Still, it tends to be impressive if differently conceived and executed studies show similar findings.

D. Characteristics of Drinking Drivers:

The usual pattern in the literature is to title a report something like "Characteristics of the Drinking Driver" and then proceed to discuss people charged with driving while intoxicated and alcohol-involved accident-responsible drivers as if this was the same population (e.g., A.M.A., 1968, pages 4-7), this tends to cloud the issue considerably. Of course, the paucity of data on the wider population is understandable in view of the fact that, by definition, a drinking driver who is neither erratic nor accident-involved comes to no one's attention unless he is stopped in a roadside survey, and he is not in the position of someone

who has been arrested and is thus compelled to submit to various tests and questions. At this point, when we are not yet sure what we are looking for, it appears worthwhile, although somewhat tedious, to look carefully at the findings of Robert Borkenstein, et al's comprehensive roadside survey in Grand Rapids, Michigan, which, unlike most other studies provides a basis of comparison on a large number of characteristics between accident and non-accident drivers with and without alcohol.

The Grand Rapids group found that 17% of all accident-involved drivers (i.e., regardless of seriousness of accident) had been drinking as had 11% of the controls, who were matched to accident drivers by site, time of day, day of week, month. Control group members with alcohol were mainly middle-aged (25-44), with the middle age ranges over-represented at each positive B.A.C. level The drinkers were more likely to estimate their annual driving at more than 5000 miles per year, and less likely to have either less than 8 or more than 16 years of education. Those drinkers with higher levels of educational attainment were markedly less likely to have high B.A.C. levels, while people belonging to visable ethnic minority groups were over-represented at high levels. Most of the drinking drivers were married or single but the widowed, separated and divorced classes were over-represented at high B.A.C. levels. Lower occupational status levels were over- and upper occupational levels under-represented at high B.A.C. levels. In general, the greater the reported drinking frequency, the greater the concentration of heavy B.A.C.'s observed. Females were under-represented, especially at high B.A.C. levels. In comparing controls with accident-involved drivers, both groups'most frequently stated place of drinking

was, in order: person's own home, public establishment, home of friends or relatives, party and "other"; however, the accident group was over-represented in the "own home", "party", and "other" categories and under-represented in the "public establishment", and "home of friends and relatives" group. Almost half the control and accident groups were likeliest to drink on weekends, holidays and special occasions, and both groups were more likely to drink later in the day than earlier. (About 70% of all subjects reported the evening as the most likely drinking time. The small number of morning drinkers were disproportionately found in the accident group while the before dinner drinkers were under-represented there. More than 85% of the total sample drank most frequently with family and friends, but those who drank most frequently with casual acquaintances were over-represented and those who drank with business contacts under-represented in the accident-involved group. Those who reported drinking alone, however, were over-represented at the high B.A.C. levels in the roadside sample, while none of those who drank with casual acquaintances appeared in that category. Drivers involved in accidents were likelier to prefer beer or wine and less likely to prefer distilled liquor than the sample as a whole. Preference for wine was under- and preference for beer over-represented at high B.A.C. levels. In both accident and control groups, church attendance was negatively related to incidence of alcohol; in the control group only, income was found to be non-discriminant of alcohol-level classes.

In the control group only -- those who reported keeping alcoholic beverages available either all the time or never were found

proportionately less often in the high B.A.C. group then those who kept it on hand most of the time, and those who kept it occasionally were substantially over-represented at high levels. Those who reported taking a higher average number of drinks per occasion were over-represented at high B.A.C. levels, as were those who reported getting "high" (i.e., something less than drunk or intoxicated) more often than once a year. Over one-third of the control group estimated that they could drive safely after drinking six or more drinks within two or three hours of driving, and this group was over-represented at high B.A.C. levels. Approximately one-third stated that they sometimes drove after exceeding their estimated capacity, just under 10% admitted to doing this one or more times per year and under 5% one or more times per month. One quarter reported driving within two hours after drinking once a week or oftener, with those who reported doing this each day over-represented and those who reported it less often than once a week under-represented at high B.A.C. levels. Controls who said that alcohol has never caused them a problem with themselves, their family or the police constituted 93% of the sample; the other 7% tended to have higher B.A.C. levels. The 5% who report hangovers once a month or more frequently accounted for more then one-third of the observed B.A.C.'s of 0.15% or more. About 11% had experienced one or more blackouts; the 3% who had experienced a blackout within the last month were over-represented at high B.A.C. levels.

What does all this tell us definitely? Very little. There are some indicators of differences between high B.A.C. drivers and those with just some alcohol, but only at the level of different statistical

probabilities; there are somewhat more relevant indicators of drinking pathology as over-represented in the high B.A.C. group. One of the most directly useful findings of the study is that "the highest incidence of high alcohol levels within the major variables of classification does not necessarily fall in the class with the worst overall accident experience" (Dale, page 194). This is true of age, estimated annual mileage, marital status (single drivers have the worst accident experience, but widowed, separated and divorced ones the highest alcohol incidence), sex, and frequency of drinking (those who reported drinking once a month had the worst overall accident experience). In the case of a number of other variables -- level of education, occupational status and ethnicity, high-accident and high alcohol groups corresponded. The lack of similar characteristics in high B.A.C. groups and high accident groups suggests that high B.A.C. crash involvements cannot in the main be attributed to the same factors which seem to account for other drivers' crashes.

The only study of drinking drivers in general which is comparable in scope to Grand Rapids, is Cospers' self-report questionnaire distributed to a randomly-drawn sample in a small middle Atlantic city (Cosper, 1965). His findings were roughly similar to those of Grand Rapids with the exception that he found a greater incidence of higher educational and class-status groups; this contradiction resolves itself in the light of the fact that since the lower-class groups are likelier to drink more per occasion and to be "problem drinkers", they would drink and drive more frequently and thus turn up in roadside surveys. Whereas the other groups, more of whom drink and drive but do so infrequently, would be under-represented there but would show up in self-report. This is yet another detail to keep in mind

when we begin to draw conclusions based on a conception of who the drinking-driver is. One other overview of drinking and driving in general reached two conclusions important to us here: Cosper and Mozersky did an exhaustive re-analysis of the data from both Cosper's study and Grand Rapids and comment that:

> "The results of the present study also cast doubt upon the utility of using a frequency-quantity index or of speaking of 'heavy drinkers': frequency of drinking was directly related to social class and quantity of drinking inversely related; average quantity and frequency of drinking were differently related to age. " (page 113)

Yet Perrine, et al (1971) found that:

> "A discriminant function analysis correctly classified 95% of clean-record drivers and 87% of drunken drivers using four significant variables: lifetime citations, occupational level, beer frequency, and liquor quantity. "

In other words, this index, inapplicable to drinking drivers in general, does apply to a particular sub-group of interest to us. Cosper and Mozersky also offer as a hypothesis that:

> "Driving after drinking is mainly related to drinking that is abnormal only insofar as it is excessive and only secondarily to drinking that involves acting-out behaviour or to drinking that is non-social. " (page 106)

Yet in Shupe and Pfau's Cleveland study:

> "More than half the persons arrested (for DWI and alcohol-related accidents) had B.A.C.'s of .18% to .25%, a level only reached after upwards of twelve drinks. " (page 80)

Waller (A.M.A., 1968, pages 5-6) estimates that less then 1% of non-accident-involved drivers would reach a B.A.C. level of .15 when driving. Out of the drunk drivers studied by Perrine, et al (1971) "most were heavy drinkers with excessive numbers of prior crashes and citations".

The evidence for separation of a high-risk group from the broad range of drinking drivers begins to look rather strong, although it bears reiteration that many of the characteristics to be briefly discussed here are ones the problem drinking driver shares with the social drinking driver.

E. Characteristics of The High Risk Group:

Age -- Joscelyn, et al (1971) summarize a number of studies with the comment that because of different populations studied and different focal points of study it is hard to draw any firm conclusions about the age of the problem drinking driver beyond saying that he is usually under 45. This might be an artifact of spontaneous remission, and, as one account suggests, it may be that in small part the decreased numbers at higher ages are due to the tendency of problem drinking drivers to get into fatal accidents. The general conclusion of most studies (e.g., Shupe and Pfau, Coldwell and Grant, Hyman) is that the middle age ranges predominate, although Zylman's point about differential exposure, noted earlier, is worth considering. The younger drivers involved in DWI or accidents tend to have lower B.A.C.'s than the older ones, (U.S. D.O.T., 1968 p. 58), which means that persons unused to both drinking and driving are more susceptible to impairment from lesser quantities of alcohol.

Sex -- Every study of the high risk driver has found them to be almost exclusively male. (Perrine, Joscelyn et al; A.M.A.)

Marital/Family Status -- Problem drinking drivers are more likely to have had a disrupted early family life (e.g., frequently have alcoholic parents) and that they are either unmarried or have had serious

marital problems, e.g. separation, divorce, multiple marriages. (A.M.A.; Joscelyn, et al) A considerable amount of social agency contact is also frequently characteristic.

Socio-Economic Status -- Most studies are in agreement (see Joscelyn et al's review) that the preponderance of high-risk drivers are found in the working class and lower middle class groups. Perrine, et al, who distinguished DWI's from fatally injured drivers with alcohol, found that this held for the former but not the latter; they reason that a police bias making the driver of an older car more likely to be arrested might account for the lower-class preponderance in DWI charges or it might be the result of different behaviour on the part of people from the different social classes. In any case, in view of Cosper's finding that by self-report as opposed to the roadside surveys the preponderance of drinking and driving in the lower classes is reversed, the fact that the fatalities in Perrine's study seemed to be more evenly distributed among the various social classes should be kept in mind as it may mean that the high-risk population has a somewhat different socio-economic composition than has up to now been thought.

Educational Status -- Most studies agree (Joscelyn, et al) that problem drinking drivers are predominantly of lower educational status. The same proviso as that suggested for socio-economic status should be kept in mind, however. (not necessarily)

Job and Residence Stability -- There is some evidence in the literature (see Joscelyn, et al) to suggest that some of these people change jobs and place of residence frequently, but this is not particularly well established; if it does exist, it does so as a slight statistical trend

and is by no means true for the entire population with which we are concerned.

Ethnicity -- Whatever visible ethnic minority group(s) suffers most from prejudicial or discriminatory treatment in the particular geographical locale seems likely to be disproportionately represented. As Zylman (July, 1972) and others have indicated, this over-representation disappears when you control for social class.

Psychological Characteristics -- This area is even more tangled than those of sociological investigation, for in addition to use of different populations and control groups there exist a multiplicity of different theoretical orientations and approaches to testing which make cumulative data hard to arrive at. Further, though under investigation for years, the "acloholic personality", i.e. an identifiable syndrome, set of traits or whatever applicable to any and all alcohol-prone individuals, has eluded unequivocal discovery. Joscelyn, et al, conclude from recent findings which suggest the existence of multiple independent syndromes rather than a single one that:

> "These results seem to argue against there being an identifiable 'alcoholic personality'. " (page 18)

The most clearcut characteristic to be so far established seems to be dependency. Adams (in Harger, 1965) has developed a theoretical scheme which accounts for a particular, frequently-reported syndrome (dependency, i.e., immaturity, overdependency; impulsivity; hostility; egocentricity; feelings of unimportance; self-destructiveness) in terms of a generalized dependency and "oral character". The beauty of his scheme is not only that both he and others are able to provide some empirical support for

it (e.g., Selzer, et al, same volume) but that it is theoretically consistent with both learning and psychodynamic theories. Incidental to this particular discussion but illustrative of what faces psychological researchers in this area, a study by Smart (same volume) failed to find extrapunitiveness (i.e., hostility) in a tested sample of alcoholic clinic patients with accident records; does this mean that this seemingly pivotal characteristic is not a reliable index of the high-risk group? Selzer, et al, simultaneously answer this question and point up the intricacies of the personality factor: they found that the high risk group do not express hostility when sober but do so when drunk, and naturally Smart's sample was sober at the time of testing.

The same sort of complexity has turned up when effects of alcohol are examined in relation to those personality characteristics which are not necessarily indicators of any kind of psychopathology; for example, Drew, et al, found that alcohol influences the behaviour of both introverts and extroverts, although the effects are different. As a result of the difficulty and frequent lack of clear-cut results, there has been a tendency when seeking to identify high risk drivers to use approaches other than psychological testing: "The traditional technique has been well summarized: it consists of gathering information on each possible subject concerning previous contacts with community agencies, arrests involving drinking, and previous accidents" (Joscelyn, et al, page 18). Testing is then devoted to straight alcohol-related questionnaires, such as the Michigan Alcohol Screening Test, which, surprisingly, appears to get relatively candid responses. There remains

the question of whether better programs could be designed if people could be streamed according to differing personality characteristics and their attendant needs. For this reason, the fact that some researchers (e.g., Mortimer and Lower) are still pursuing personality research in connection with problem drinking driving is encouraging, despite the fact that most such efforts are devoted to blanket identification rather than sub-division of the problem drinking driver group. [4]

Drinking Pattern and/or Habits -- As noted, a variety of indices indicate that the problem drinking driver is a heavy drinker in terms of both quantity and frequency (Perrine, et al). Other than that, there seem to be only greater or lesser statistical likelihoods that any given problem drinker will manifest a different drinking pattern from social drinking drivers, e.g., drink in the morning, drink with acquaintances rather than friends: the possibility of some more subtle factor remaining unnoticed cannot yet be excluded.

Driving Offence Record of the Problem Drinking Driver -- Joscelyn, et al, cite several studies indicating that problem drinking drivers have higher rates of alcohol-related driving offences; there has been some suggestion that alcoholics (and thus, by implication, possibly P.D.D.'s as well) also have more non-alcohol related accidents (Smart, 1969) but not enough research has been done to unequivocally determine whether or not this is so. Pertinent to this point is the fact that non-alcohol related charges may indicate reduced charges on what are actually/DWI

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[4] There are exceptions in the generalized alcoholism field -- see Partington and Johnson.

offences, so a long string of convictions for minor moving traffic violations may be an indicator of drinking-driving. In any case, a sizeable proportion of those drivers who cause a fatal accident while drunk or intoxicated have no previous alcohol-related traffic violations on their record (Clay); which brings us to another characteristic of the problem drinking driver which seems worthy of close attention at this point.

Non-Driving Offence Record of the P.D.D. -- Arrested and convicted DWI offenders have disproportionately high arrest rates for both alcohol and non-alcohol-related offences (Waller, 1965). Proceeding in the opposite direction B.A. Moser and associates studied persons convicted of serious criminal offences and found that the 20% or so of their sample who are heavy drinkers were by self-report more likely to have hazardous driving convictions and accidents. This, plus the peculiar elusiveness of a distinct alcoholic personality syndrome, has led some investigators to what may turn out to be an extremely sophisticated refinement in the study of the high risk drinking driver. Margaret L. Clay after careful study concluded that alcoholics per se were not a high risk group, but identified a sub-group of them, manifesting an "aggressively irresponsible life style" characterized by "non traffic related drinking offences, violent crimes, social and fraudulent offences, larceny and miscellaneous non-violent crimes" (p. 11). If this proves to hold up in studies of other populations of high risk drivers, it not only gives us a point of attack via advance identification of a high risk group, but also explains the doubts of many students in the field concerning the utility of seeking to isolate a high-risk group -- i.e., if it's true that only some, not all, problem drinkers who drive are

high risk, investigators who thought in terms of all problem drinkers as high risk would of necessity arrive at inconclusive findings. Dr. Clay's suggested index, then, is based on (1) the number of non-alcohol related moving traffic offences, and (2) both drinking and non-drinking non-traffic offences. She found that high-risk drivers by this index were more likely to be separated and divorced, to have frequent job and residence changes, and to be under 35, which suggests that this is a sub-population rather than all high risk drivers when we compare the data reported under the heading of "age".

Residual Characteristics -- Problem drinking drivers seem to cause accidents and get arrested mainly in their home towns; for some reason, fatally injured drivers in New York were significantly closer to home than similarly-exposed controls (McCarrol and Haddon). Drinking drivers in general seem to accumulate more mileage per year than non-drinking drivers, but the heavy drinking driver who drives infrequently is disproportionately dangerous. Problem drinking drivers, in contrast to social drinking drivers, drive faster when drunk.

Regarding drug usage, alcohol and driving, two recent studies (Moser, et al, studied arrestees for serious crimes; Berg, et al, studied college student drivers) found little relationship between driving record and drug use; neither study is very good, (in that their choice of population is limiting and their methodology faulty), but it should be mentioned that Berg, et al, did identify a category of youthful multiple drug users characterized by heavy use of both alcohol and psychotropics; the implication is that this group would be likely to drive while under multiple chemical influences. In another study Finkle found that nearly

one-fourth of the 10,000 people asked to take blood tests in Santa Clara County between 1966 and 1968 had used drugs, more than one-half of these "dangerous"; most of the drug users had also used alcohol, and it's also of interest to note that Finkle found reason to believe that this was a relatively stable pattern for the group involved, rather than a sudden upsurge with the fad of drug-taking in the young. The exacerbated difficulty in testing for a multiplicity of chemicals, etc., and the most infinite possible range of effects make this one of the more difficult sub-topics of this already horrendous subject, but statistics on the extent of licit and illicit drug use are impressive enough to justify some attention. It might also be postulated that, given the social group-specific character of some types of drug use, e.g., tranquillizers for harried middle class people, "uppers" for truck drivers, multiple illicit drugs for young experimenters, marihuana and hashish for "swingers", that identifiable patterns exist in that certain drivers of specifiable characteristics might habitually combine alcohol with particular drugs.

In conclusion, it seems that although there are some data supportive of the existence of an identifiable high risk group of drivers and other indications that this group can be sub-divided (e.g., by age, drinking-driving experience, quantity consumed, etc.) into several even more particularized groups, there is no tight scheme which includes all the characteristics which seem to matter and subsumes the varied findings of all the studies to date. This may mean that geographical, sub-cultural and other factors varying with each locale make re-investigation necessary each time a new city or province decides to do something about its drinking drivers. It may mean that the permutations of factors are too complex and numerous to repay attempts to delineate a high risk group or it may

mean that research to date has not resulted in unequivocal findings because it didn't sub-divide the populations studied finely enough, or because different research efforts utilized different population bases. Until we have additional evidence favouring one or another of these alternatives, it would seem wise to proceed on the basis of the first one and pursue renewed investigation as the opportunity arises.

The Impaired Driver Population of Ontario

A. Incidence and Accident Involvement :

As a general statement, the uncertainty in this area in the United States is exacerbated in Canada, where far less research has been done and, until the immediate present, few individuals and groups were actively involved. Whether current efforts will result in the Canadian state of knowledge being advanced to the level of chaos currently achieved by American researchers or in a coherent, unambiguous picture of the situation remains to be seen. A certain amount of good material is available. Lucas and his associates in 1951-52 performed a pioneering effort in Toronto, studying accident-involved and control vehicles at accident sites, Monday to Saturday evenings. The control vehicles were not only limited by time and place of accident occurrance, but had to be the same vintage as accident-involved vehicles. Combining accident and control vehicles, Lucas found that for this particularly delimited group about 15% of drivers had B.A.C. levels of 0.05% or over; more than two-thirds of these were in the accident group. More recently, Campbell did a comparative study of fatal accidents in Alberta, New Brunswick and Ontario. Of the 887 drivers and pedestrians who died within six hours

of an accident in Ontario in 1966-67 and were tested, 444 registered negative, 281 registered .15% or over, another 126 between .05 and .14%, and 30 between .01 and .04%. Fatally injured drivers between the ages 15 and 64 were more likely to have positive B.A.C.'s than those over 65; they were more likely to have B.A.C.'s of .10% or over, less likely to have B.A.C.'s from .01 to .09%. Campbell cautions (page 35) that "the data are somewhat regional in character". Dominion Bureau of Statistics figures (Statistics Canada, 53-206, 1970, page 58) and Ontario Department of Transport figures are relatively close: for the year 1970, then, out of 241,403 accidents, some 5,900 drivers had "ability impaired" and 12,300 "had been drinking". Alcohol was known to be present in about one-third of the nearly 2,000 fatalities, in about 10% of the 82,000-odd personal injury accidents, and in about one-fiftieth of the "property damage only" accidents. Strangely, while the total number of accidents occurring fluctuates wildly from 1968, 1969 to 1970 (259, 882; 284, 158; 241, 403; respectively) the number of all accidents with alcohol involved remains fairly constant at 21-22000 and the proportion of alcohol-involved fatalities remains at one-third of all fatalities. In all three years, some 45% of fatally injured drivers provide evidence of drinking, as do between 7-8% of all drivers involved in collisions. Although the Department does break-downs of some driver, vehicle and accident site characteristics, there is no way of extracting the alcohol-related occurrances from the others in their presentation. These reports are taken as received from police forces around the province, so that no uniform standard of reportage can be assumed. In non-

municipal settings fatal accidents get more intensive investigation (from the O.P.P.) so that somewhat more confidence can be placed in the figures concerning fatalities. It should be mentioned that the figure for fatalities is not broken down to isolate "at fault" drivers; were this to be done the percentage of alcohol involvements would presumably go up, probably to match the typically quoted American figure of 50%.

B. Charges Laid:

The Department of Justice Centre for Forensic Science publishes figures on the number of Breathalyzer tests conducted each year; from 1964 to 1971 there has been a steady increase in the number of tests conducted, only some of which is attributable to the increasing numbers of municipal and provincial forces equipped with testing equipment. In 1970 and 1971, the Centre's figures list tests conducted in the context of driving offences separately from others. In those years respectively there were 29,716 and 34,719 interviews.[5] In 1970 8.7% and in 1971, 11.1% of the drivers refused the test. Of the tests conducted, 8.4% of drivers tested in 1970 and 9.7% in 1971 were not charged because their readings were low. The remainder were charged under Sections 234 and 236 of the Criminal Code of Canada (drive while impaired and driving with more than 80 mgs. of alcohol per ml. in the blood, respectively). Altogether, in 1971, 27,871 drivers were charged. It cannot be assumed, however, that this figure represents any kind of uniform province-wide ratio between actual offenders and those who come to police attention, for although there has

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[5] The Centre's literature suggests that an "interview" consists of the Breathalizer Operator explaining to the subject what the machine is and how it works, and ascertaining whether he is willing to take the test.

been some attempt to standardize the actual testing procedures there is no reason to doubt that different departments use different criteria in determining who (and how many) are tested, or stopped in the first place. The figures include a place-by-place breakdown of interviews, tests and results, which might allow some estimate to be made regarding occurrance in a particular locale, given knowledge of police coverage, departmental policy and the local officers' habitual interpretations thereof. The Traffic Enforcement Statistics of the Dominion Bureau of Statistics (Information Canada 85-206) reports for 1970 that 30,759 people were charged with driving while impaired in Ontario, which when compared with the 24,880 people charged (as per Forensic Science Report) after breathalyzer tests suggests either that some 6,000 people were charged in localities not using breathalizers, or that Information Canada and the Forensic Science Centre use different bases of calculation, etc. In any case, no breakdown of characteristics of individuals charged or details of offence are presented with either of these figures.

C. Toronto:

The same is true of the statistics of the Metropolitan Toronto Police. There is also reason to suspect that much of this information would be unreliable if presented, relying on self-report of the individual, or subject to alteration due to the exigencies of plea bargaining. According to their Comparative Accident Figures for 1971, there were 35,761 accidents in Toronto in 1970, 36,997 in 1971; of these 3,822 and 4,032 respectively were drinking driver accidents, something in the vicinity of one-eighth of

the total.[6] There are no figures for fatal drunk driving accidents, but of the 134 and 121 persons killed in Toronto traffic in 1970 and 1971 respectively, 19 and 15 respectively were killed in accidents involving drinking drivers. Of the 17,470 and 18,017 persons injured in 1970, and 1971 respectively, one-eighth and one-tenth are listed as having been hurt in accidents involving drinking drivers. The Police report that they are unaware of any explanation for the substantial drop in alcohol-related deaths and injuries. In terms of offences[7] in 1971 the Toronto Police reported 8,667 drive-while-impaired offences, 1,635 Refusal of Breathalizer Tests, and 7,130 Breathalizer In Excess of 80 mg. These resulted in 6,598 Drive While Impaired, 973 Refuse Breathalizer and No Breathalizer in Excess charges; the reduction in numbers is due to their practice of laying of all 3 charges where applicable, then dropping all but the most serious.

D. Driver Age:

From the Department of Transport figures it would seem that the bulk of the drinking driver accident group are in the middle age ranges, with accident-involved drivers under 19 and over 65 under-represented with alcohol involvement. The age ranges 25 to 34 and 35 to 44 are consistently over-represented in both the "had been drinking" and the "ability impaired" categories. The 26 to 29 age group are consistently

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6 When they separately (page 39) list "Motor Vehicle Accident Causes", 4,290 of the 35,866 are listed as "driver had been drinking".

7 Metropolitan Toronto Police (page 56) Annual Statistical Report, 1971.

over-represented in the "had been drinking" group and under-represented in the "ability impaired" group, suggesting that they do get into accidents at lower B.A.C. levels; both the 45 to 54 and 55 to 64 age groups were consistently under-represented in the "had been drinking" category and over-represented in the "ability impaired". To ascertain which one of a number of possible interpretations of this latter is correct would require additional information which we do not have.

E. Other Characteristics of The Problem Drinking Driver in Ontario:

In the only published[8] study which deals with this question, Coldwell and Grant studied 594 drivers taken into custody by the Ottawa Police on suspicion of impairment or intoxication from July 1st, 1960 to June 20th, 1962. Their conclusions allow us a first glimpse:

> "The majority were apprehended in the business districts of the city between midnight and 3 a.m., on Fridays and Saturdays and during the summer and fall months; charged drivers under 24 and over 55 years of age, proportionately had a greater number of collisions then charged drivers between these ages. The modal B.A.C. was around 195 mg.%, the mean 216 mg.% -- this and the relatively large number of drivers with previous convictions for impaired and intoxicated driving suggests that the group is largely one of problem drinkers; a large majority stated they had been drinking non-distilled alcoholic beverages in licensed premises. The charged drivers in professional and semi-professional occupations prefer to drink distilled beverages; members of labouring and skilled occupational groups were over- and managerial and professional people under-represented; the age group between 25 and 44 was over-represented both in the apprehended and in the accident-involved group, while under 24 and over 55 group were under-represented in both. "

To recapitulate, then, on the basis of the small amount of available data

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8 The Addiction Research Foundation's London, Ontario branch is presently gathering data on drivers charged with impaired driving in their city.

it would appear that Ontario's drinking driver problem, at least as expressed in terms of the ratio of alcohol-involved to non-alcohol involved accidents, is roughly proportionate to that of the United States; the parameters of drinking and driving in Ontario and the characteristics of those involved remain almost completely unexplored.

Methods of Intervention in the Impaired Driver Situation

A. Some of the Issues:

The initial necessary step for someone attempting to design a program for impaired drivers is the recognition that some things which seem as if they could logically be taken for granted are just not so. For example, several studies have found widespread support amongst the lay public for the statement that "something must be done about impaired drivers"! Does this mean that an informed citizenry is prepared to back up any reasonable program that will cut down on the 50% of fatal accidents and large absolute number of other violations attributable to alcohol? Not necessarily; a recent survey concluded that:

> "Approximately half of the public group were unaware of the definition of the drinking driving laws. Awareness of penalties was even lower. " (Borkenstein, et al, 1971, summary)

Thus a sizeable percentage of the public do not really know enough about the issue for their expression of opinion to be taken seriously; further, a study by Little, indicated that in a sample of the public much better informed than those questioned by Borkenstein, et al, many drove after drinking despite this awareness. To complete the picture, Borkenstein found that a sample of Indiana police officers, justices of the peace,

lawyers and state legislators:

> "also showed a minimal knowledge of the actual drinking driving situation as it would relate to the legal definition . . . they all drastically under-estimated the amount of alcohol it would actually be necessary for them to drink to register .10% B.A.C. They also felt that they would be unfit to drive a car at B.A.C.'s far below the legal limits. In general, almost everyone included in the survey thought the D.W.I. laws were enforced too leniently. " (op cit, page 3)

The authors conclude:

> " The public and the officials are not pressuring for more vigorous prosecution of the 'out group' of D.W.I. law violators because they all think of themselves, to one degree or another, as members of that group. " (page 4)

An uninformed and hence potentially hostile public not to mention more directly-involved groups is not the only thing standing in the way of a program for drinking drivers. The program designer's bewilderment is another. As pointed out, the characterization of the program drinking driver is not without controversy, so the potential designer must first reach his own conclusions as to precisely whom he is trying to reach i.e., can certain high-risk groups be isolated and given different programs? Once this is decided, some means must be found to establish a baseline against which the program can be evaluated: how many people are in the target group in the target community, what are their drinking and driving patterns, how often do they have accidents or get charged with traffic violations related to alcohol, how high is their recidivism rate as measured by repeated charges, what general, local, specific and idiosyncratic police and judicial vagaries distort the real picture as it is portrayed in police reports and through the courts!

Another question which loses its air of triviality on reflection is: what is this program attempting to accomplish? Part of the

answer to this is, of course, determined by what definition of the target population the designer comes to accept. A program intended only for problem drinkers would by definition have different aims from a program more broadly geared to the general drinking-driving population. Alternatives at other levels remain possible also: is the program designed to stop this person from ever combining drinking and driving? From driving after drinking more than a given amount in a given time period? Or is the program intended to concern itself with his overall drinking behaviour, which at times happens to affect his driving; in that case, will it be dealt with as a discrete behavioural focus, or will the program offer broad-ranging assistance with whatever he needs? Perhaps it's not the business of the program to play God and ask whether the man is beating his wife more since the program stopped him from drinking and driving. But in that case, where does the interest stop, as there exists abundant evidence (Alcohol and Highway Safety Report, page 18) that a significant over-representation of high B.A.C.'s occur in fatally injured pedestrians and that there is a great deal of alcohol involvement in crimes of violence. In the light of these facts it may be that a program concerned solely with the act of drinking and driving, might legitimately be a measure of callous irresponsibility towards society no less than towards the problem drinker himself. At what point in the "career" of a high-risk driver is the program to intervene? Most studies have assumed the answer to this question to be self-evident in one of two ways: if they felt that the high-risk driver could not be differentiated from others, the obvious solution was a broad ranging, on-going educational effort in which case

this question would be irrelevant. Otherwise, or, sometimes, in addition to this, the point of intervention for some form of concerted program was taken to be a person's conviction for a liquor-related traffic offence. But Waller, Clay, and by implication Perrine (1971) suggest that high-risk drivers are identifiable before they get into serious liquor-related traffic offences. How then, is it possible to gather the relevant information when every study to date complains of the inaccuracy, incompleteness, non-comparability and inaccessibility of police and other agency materials? And is gathering this information justifiable; will ethical concerns permit interference with someone's individual exercise of their driving privileges on the basis of a statistical probability that they are a high risk? As any kind of program is expensive, any but a blanket educational program raises certain other issues: in order to be able to evaluate results, groups of comparable risk should be placed in the program and in a control category, which means that the researcher would knowingly be placing in a less-than-optimal-treatment control group people whom he suspects are likely to cause fatal drunk driving accidents. Are drivers pre-selected for the program on the basis of seeming high probability of their benefiting from it, or does the program draw a cross-section of high-risk drivers, or is choice made on some other basis? What criteria are to be used? If the referral is not to be at the (sole) discretion of a researcher but rather a Court, what authority does the Court have to alternate dispositions, e.g. suspension of sentence pending completion of program? What criteria will the court utilize for referral/non-referral? Will these criteria and the Court's

position in general be guided by treatment and research exigencies, or will the Court, and, for that matter, other relevant official groups, pursue separate and perhaps in places conflicting ends and means? Once the foregoing is somehow ironed out, there is still the question of designing a program for the impaired driver informed by: (1) the specific mores, laws, resources, attitudes, etc. of the locale concerned; (2) the expected impact of the given program on all the relevant groups it will effect: the general driving public, the police, the impaired driver population, the judiciary, civil libertarians, etc.

In the course of program development some less specific but equally tough philosophical paradoxes will demand resolution: for example, if we decide that our target population consists of people who are compulsive problem drinkers, unable to stop combining drinking/driving, we would agree that the arguments in favour of a punitive approach are nonsensical: yet would this not be equally true of forced treatment, unless something about the treatment procedure assures us that the voluntarism thus far lacking in the individual will come about as a result of the treatment? All the foregoing considerations together will decide whether we undertake a program with a single approach (e.g. educational) or one with multiple components (e.g., mixed education and various forms of therapy).

B. Different Approaches:

(1) Correctional -- This, until quite recently has been the "method of choice" although that term may not be strictly applicable in that it happened more by default than through planning. Persons

convicted of DWI or related offences were subjected to penalties such as fines, suspension of licence and jail terms. In theory the penalties were graduated, increasing both with seriousness of offence and with number of past offences, but the state of police and court records is such that in practice only the former has usually been taken into account. This approach avoids many of the difficulties discussed regarding development of a program: the "subjects" are self-selected by already having gotten into trouble, eliminating the need to pick a target population. It's presumably not unethical to interfere with someone who's actually done something dangerous both socially and to himself. The approach is heavy-handed, unconcerned with differentiation between individuals other than on the basis of what they have done and whether they have done it before: thus a person who comes before the court on a first DWI charge is relatively automatically given the going penalty for that jurisdiction and is no longer regarded as the Court's concern, unless he should happen to come up before it again, in which case he will ultimately lose his licence or be sent to jail. It is left to the individual himself to take whatever steps are needed to see that this doesn't happen.

The correctional approach definitely fails on three counts and possibly succeeds on one. Its first failing is not its own but rather one which occurs at the enforcement level: at least with present resources and level of sophistication, it is impossible for the police to catch more than a small percentage of DWI offenders; the drinking driver is therefore taking a calculated risk in which he has a very low probability of "losing", i.e. paying the penalty assigned by the judicial authorities. Secondly, this is an after-the-fact approach which only

comes into effect when the person has already done something, at which point, in some cases, a life has already been lost. The counter-argument to this is that the correctional approach does have a before-the-fact effect in that the thought of possible penalties deters people; this may be true in some cases, although Little found that the people in his sample reported that it was fear of accidents rather than fear of being caught which was deterring them from drinking and driving. It is certainly not a real deterrent in all cases, and the likelihood is that it is least so for those who most need it, if we recall that the high-risk driver often has a history of accummulated liquor-related traffic convictions. The third objection centers on the extreme penalties under the correctional system, licence suspension and jail, and the objection is that they do not work. Many drivers whose licences have been suspended or revoked drive anyway (Waller, 1968, page 177); although it can be argued that they drive much more carefully then, it still seems unreasonable to assume that the revocation would act as a deterrent on drinking and driving after the period of the suspension, as it has not actually cost the person enough to make them reconsider their actions. As for jail terms, this type of solution has proved to be patently ridiculous. If penalties are a detterent, being hauled into court and fined should be penalty enough for those who are simply irresponsible about drinking and driving. But enough DWI people who cause fatal accidents have been in and out of jail to suggest that the correctional approach per se is an inadequate solution to their part of the problem.

(2) Enforcement -- Often linked for obvious reasons with the Correctional approach by those who favour that method of dealing with

the problem, this position calls for "tougher laws, better enforced". In recent years some relatively sophisticated methods have evolved from the simplistic demand that the police "do something". Roadside and station house breathtesting devices have been devised; separate police squads have been designated, specially trained, and deployed to deal with nothing but the impaired driver; the number and ubiquity of highly visible roadside testing sites have been increased to the accompaniment of vast publicity campaigns. This approach seeks to intervene at the point in time at which the behaviour occurs by making salient and likely the possibility of negative consequences imposed from the outside (this latter may be a crucial point, for we might hypothesize that the possibility of self-inflicted consequences, i.e. a crash, may not deter certain people who may consider it a challenge to conquer, whereas the glory in being hauled off to court and perhaps jail seems minimal).

Even if another approach is adopted as the basic one, enforcement will obviously be a factor in effectiveness, for it is the police who are first on the scene when impaired driving reveals itself and it is through them that individuals are filtered through courts and program facilities and it is their statistics on incidence rates and characteristics which are vital to any evaluative scheme. Thus several things become important: Coldwell and Grant note (page 276) that 74 of 594 drivers apprehended on suspicion of DWI in Ottawa were let go without being asked to take a breathalizer test. In view of the contention of Waller and others that visible clues are a poor indicator of degree of intoxication except at extremely high levels, and Borkenstein, et al's

finding that police officers are not spectacularly well informed about the basic facts, we might well question the bases for deciding that someone did not need to take a test. There is also the question of bias: do police officers charge or not charge on the basis of characteristics irrelevant to degree of person's intoxication? Studies by Hyman, et al, the Grand Rapids group (reported in Zylman, 1972) suggest that the disproportionate number of visible ethnic minority group members occurring in DWI arrests is due to the disproportionate percentage of these groups in high-risk populations; yet Black in a study of police departments in a number of northern U.S. cities in 1968 reports (pages 249-252) that white people were likely to be given citations (summonses) while black people were both likelier to be arrested or to be let off then cited for traffic misdemeanours, including drunk driving. He suggests that this might be because black people are more likely to be without an operator's licence, which would mean that the officer could not summons but could only utilize one of the two extreme measures; regardless of why it happens, this suggests that differential police treatment may effect charges laid. Zylman (1970) lays out some other elements which may distort the reality of DWI as it is filtered through the policeman's perspective: the officer's perception that the penalties are too high, the going over he suffers in court from defence attorneys while he is trying to substantiate with unreliable visual and behavioural indices the registered B.A.C. level; the fact that the exigencies of the court room procedure make it to his advantage to lay a lesser charge.

Another possible influence on their behaviour is the fact that

the police belong to a masculine subculture which with its emphasis on virility-proving may tend to make them rather sympathetic to the DWI driver, in whose place they (either through lack of knowledge of B.A.C. levels in proportion to quantity consumed, or perhaps, accurately) may see themselves. All this implies that any program relying on strict enforcement is going to have a lot of problems to contend with, but also that these problems are pertinent whatever the program, for how can we accomplish even such basic tasks as defining the problem drinker population if we do not know what extraneous factors are influencing the police from whom we get this information? A few other considerations -- the ubiquitus and highly-publicized police roadside-testing program has been tried and does seem to succeed in reducing alcohol-related traffic accidents and drinking drivers (e.g., the Metro Toronto Department's Christmas Program) -- however, such a program is expensive in two ways. It costs a great deal of money, and in a democratic society, causes a lot of bad public relations for the police and a low morale within the force. It is also obvious that the police can not be everywhere at once, no matter what expenses the public is willing to bear (and the answer to this latter question may be: not all that much), and that the enforcement solution, because it deals only with preventing the occurrance of discrete, well-defined behaviour, may result in whatever it is that makes people drink and drive expressing that need in some other socially harmful fashion. Further, since cause is not examined or dealt with, the enforcement approach will be effective only so long as the stepped-up program lasts, for it is only the probability of arrest and not any fundamental change in the individual's thinking or feeling related to drinking-driving which

is causing him not to do it.

(3) Road and Vehicle Modification -- Some researchers have investigated the characteristics of serious crashes with a view to proposing changes in the construction of vehicles, roads, intersections, bridges, the placement and angles of lights and signs, etc. which would tend to meliorate the factors which seem to be crucial. For example, certain changes in the design of intersections might be made to accommodate the reduced peripheral vision of the drunk driver. This report is not going to deal with this area, not because it is uninteresting or irrelevant but because it seems a specialty in its own right, a minor part of which would concern the effects of alcohol on crashes; from our point of view, however, the reduction in incidence and seriousness of the strictly alcohol-related crashes which could be attained through this approach seemingly could well be negligible compared to what could be accomplished by getting the driver not to drink and then drive. Thus while hopefully specialists in this area will continue to attempt to reduce the contribution of vehicle and driving environment factors to all accidents, the special interest in the drinking driver himself seems better focussed elsewhere.

(4) "Cars That Drunks Can Not Drive" -- Voas, in a concise, well-written article titled as above, provides what seems the definitive discussion to date on another approach to the drinking driver which, roughly stated, is:

> "Since we cannot easily do much about the driver, let us do something about his car, so that it either will not start when he has been drinking or will somehow warn other motorists and perhaps the police of his condition. "

Voas discusses various devices which have been designed to test the person's blood alcohol content in his car; some of these are unfeasible because

they are dangerous, others because they are prohibitively difficult to analyze on the spot, still others because they might register unrealistically high (due to the presence of mouth alcohol or to alcohol on the breath of the passengers) or low (due to the person not breathing into the device long enough). All are expensive, subject to tampering, and require frequent supervision and servicing: all this in the face of the fact that the driver would be, to put it mildly, uncooperative. Unless such a device had some form of "signature", it would also inconvenience members of the person's family, etc. who also drive the car. Because of expense, public opinion, legal and ethical considerations, it could probably only be installed in the cars of persons already convicted of liquor-related traffic offences, leaving a substantial number of high-risk drivers still on the roads. Another issue here is the shifting relationship between B.A.C. and impairment, as it might be that some individuals despite high B.A.C.'s are less impaired than others with low ones.

Other suggestions incorporate tests of a particular skill supposed to relate to B.A.C. or accident-risk. These run into individual differences in capacity, the heavy drinker's habit of short-term compensation for his impairment, the inconvenience for second drivers, and the question of determining the validity of the relationship between the given test and either B.A.C. or accident-risk. Another possibility is a time-limited ignition lock, which would have the effect of enforcing the "working hours only" driving limitation which some courts have imposed on drinking drivers. This again penalizes everyone who normally uses that vehicle as well as the offender.

Another line of reasoning has led to suggestions that a person convicted of a liquor-related traffic offence be given specially marked licence plates, or have their ignition connected so that a red light goes on when the car is started (to warn police and other motorists). Licences themselves could be specially marked and all drivers be required to display their licence in their windshield, etc. These measures, again, stigmatize not only the offender but everyone who drives the vehicle; further, they stigmatize the offender even when he is not being offensive, i.e., the car would at all times be identifiable. One solution to this would be a device which operated only when certain indices of driving impairment showed: this would get by both the problem of unfair stigmatization and the problem of the heavy drinker's temporary ability to compensate, but there is again the problem of choosing indices, and such a device would be rather expensive. Voas summarizes a number of problems with all these suggestions, including design difficulties, the maintenance of a delicate device which the driver obviously does not want, the chance of inconveniencing or antagonizing innocent others, the expense, the likelihood of circumvention (e.g., having a friend or parking-lot attendant start the car). To this we might add that nothing would prevent the person from simply selling or not using his own car and renting another one. Voas comments also that should all the difficulties be ironed out, this approach is still not an independantly functioning total solution to the impaired driver problem. For one thing, you have to obtain the authority to use it with a particular individual, and there remains the question of all the high-risk drivers not yet convicted, which suggests that the

judiciary, the police and one or another alternate measures must be operating simultaneously. One point which Voas did not make but which does seem worthy of some consideration: if an appropriate satisfactory device could be found from amongst those discussed or some other, could it not be utilized as a temporary adjunct to the initial stages of a program, which would mean that the person would have a concrete goal to his progress, i.e., the restoration of his own responsibility via the disconnection of the device when he reached the point where that seemed possible.

(5) Education -- This approach is usually understood as meaning a public education program of some sort to acquaint the general driving public with the effects of alcohol on driving, to counter tolerant or apathetic attitudes towards those combining the two behaviours, and to convince the drivers themselves not to do it. Driessen and Bryk summarize some research into campaigns of this nature and conclude that most have combined the educational component with some other, making evaluation difficult, and that in any case there is little evidence that a public education campaign reduces the number of alcohol-related fatalities. It might serve as a backup for other measures as in Britain in 1967. Presumably the advantage to be gained here is that the public is informed of the pertinent laws, the measures being taken to enforce them, and the justification for them. There are several considerations here: if the high-risk drivers are something other than average social drinkers who sometimes forget themselves, a far-flung public education campaign would be utterly wasted if its intent was direct reduction of alcohol related serious accidents. This is not to say that its information-

providing function is worthless, or that some indirect effect might not occur, e.g. some people might stop their drunk friends from driving if they knew more about the possible consequences. This raises the question of whether a diffuse mass campaign can be intense enough to foster this subjective awareness in individuals, whether in the drivers themselves or their friends: in other words, is the message which reaches the person through the media impressive enough that it becomes salient when he is in the situation? Another point is the possibility of unforeseen consequences of such a campaign: it is possible that if some individuals were better informed as to the actual quantities which have to be consumed before their B.A.C. reaches, say .08%, their reaction might be "Hey, I'm not so bad after all. I think I'll have a few more". Another subtle effect is possible, in that it seems fairly clear that a lot of young drivers and some of the older ones use driving after drinking as a form of acting-out to assert virility, in which case a campaign which emphasized the dangers might actually enhance the appeal in that the person would feel he was pitting his competence against something truly challenging.

Another possibility in the educational field is the focus on specific groups. As Borkenstein, et al (1971) demonstrates, most people in the enforcement and judicial branches do not really know much about the problem with which they are dealing, and some benefit could be expected from increasing their understanding, provided of course, that their opportunities for utilizing it positively were also increased; otherwise, frustration and apathy could be expected to result. One interesting attempt has been made to alter a social pattern relevant

to the drinking-driving problem: the American and Canadian Automobile Associations have adopted a "First A Friend . . . Then A Host" approach in their Christmas messages, seeking to convey to party-givers the idea that it is a better gesture of friendship to ensure that a driving guest remains unimpaired than to continually ply him with drinks. It would be interesting to know just how well this is working, for if it was a startling success we might have cause for optimism about altering other seemingly ingrained practices, such as the drinking-driving form of virility-chasing in young males of certain social groups. Unfortunately their campaign was a mass media effort with no built in measure of effect. Another possible thrust of educational endeavour would aim at integrating information on drinking and driving with driver education and testing programs so that high school safe driving courses, professional driving schools, etc. would deal with the area at a time when future drivers' impressions of what properly goes with driving are still in the process of formation. Although this might run up against the sub-cultural and peer group mores we have discussed, and might also be subject to the student drivers responding in the socially desirable direction only because they want to get their licences, some research suggests that once people take a particular stand they are likelier to act in accord with that position than before. This would only be expected to happen if the committment to the position is made publicly, and is not perceived as coerced,[9] requirements which in the context of driver education preparatory to obtaining a licence seem mutually exclusive.

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[9] Some relevant discussion is presented in Abelson, et al, Theories of Cognitive Consistency, especially chapter F.

The issue of coercion as a negative factor in effectiveness is particularly pertinent at the last possible level of educational endeavour, the attempt to re-educate those who have already shown themselves to be high-risk drivers. The advantages of this approach lie in the fact that unlike blanket public programs it can be adapted to the specific group you most wish to reach. Since on the basis of Tillmann, et al's, experiment the refusal and attrition rates for voluntary participation in such programs are extremely high, It seems reasonable to proceed as most such attempts have, by obtaining "enrollees" through mandatory court referrals of convicted persons. Most such programs have been short-term attempts to provide the individual with awareness of the basic facts of drinking and driving, some information on alcohol and alcohol-related problems, and some assignments to force him to confront his own situation in the light of this information. Recent programs have been somewhat refined so that there is now some initial streaming of groups of drivers into programs differing according to some characteristic(s) of sub-groups assumed relevant to success, e.g., Spanish language (Zylman, 1971) and setting the educational program into an overall context so that drivers may receive education, education and therapy, medical treatment, etc. as needed. The re-education-only approach would be expected to be successful with people who feel themselves secure and responsible citizens, and whose involvement in DWI resulted from thoughtlessness, overdoing on a particular occasion, or some other such thing. The streaming and combination approaches are aimed at those with wider alcohol and personal problems, and will be dealt with in more detail later.

(6) Treatment for the Problem Drinking Driver -- Joscelyn, et al (1971) make the point that until quite recently there was no literature on treatment of the problem drinking driver since he was regarded as a purely legal concern. As a result of this the current wave of interest has largely followed the directions taken in attempts to treat alcoholism. This has at least allowed workers to begin from an accumulated body of knowledge, although whether or not this is appropriate depends on the degree of actual similarity between the alcoholic and the problem drinking driver. Some recent variations on attempted treatment have elements more specifically designed for the latter.

(i) Chemical Therapy --

Indirect drug therapy has been attempted with alcoholics, the reasoning being that the drug might ameliorate the emotional or psychic condition which was causing the person to drink. Anti-depressants, anti-psychotic agents, anti-anxiety agents and hallucinogens have been tried in this way; although Chafetz has reported success in the use of particular drugs at certain stages (e.g. acute withdrawal), Joscelyn, et al, conclude that on the whole "insufficient evidence is available to assess the usefulness of such drugs" (page 30) and point to the dangers of cross or multiple addiction.

Direct drug therapy is intended to set up a physical reaction to alcohol which will ensure that the individual will not use any. A number of substances have been found to have this effect, but several (calcium carbimide, metronidazole) have been withdrawn because of the severity of their effects, and the chief one still under consideration is Disulfiram (Antabuse). If someone who has taken disulfiram uses

alcohol, they almost immediately begin to suffer a pounding headache, constriction in the neck, spasms of coughing, a sudden steep rise in blood pressure, followed in half an hour by an equally sudden drop, nausea and perhaps vomiting, gasping for breath, periodical pain simulating a cornary attack, and fear of dying (Joscelyn, et al, Volume 1, page 24). The reaction lasts from two to four hours. Understandably, research results reported by Joscelyn, et al, indicate that people on regular doses of antabuse seem rather unlikely to drink; however, a number of other elements enter the picture. Disulfiram has a number of noxious side effects which occur even if the person does not take any alcohol, and these have not been fully investigated. The severity of the disulfiram-alcohol reaction is such that several people have died as an apparent result of it; there are a number of physical conditions, including hepatic cirrhosis, which contraindicate its use; and the question arises of the long-term effectiveness of a treatment which provides the person with a reason for not drinking other than his own desire to stop. With respect to this point it is interesting to note that research indicates that voluntary patients appear to regard the drug as not harmful and are willing to take it, in contrast to involuntary ones, so that willingness to take it appears to be a good test of the person's motivation to sobriety; this suggests that Antabuse as part of a more inclusive program to carry a motivated person past the rough times is worthy of consideration. One last point is the question of demonstrating the effects to a would-be patient (it was in one such demonstration that a person died): it now seems that it is not necessary that the person

take antabuse and then alcohol, as a careful, graphic discription by the therapist of the effects will suffice.

(ii) Psychotherapy --

Hill and Blane reviewed the literature on psychotherapy for alcoholics and found that evaluation was impossible because most articles reported on studies not properly designed for evaluative research. Other researchers have suggested that psychotherapy of various kinds is ineffectual (e.g., Joscelyn, et al, feel that psychoanalysis should be avoided because it brings up painful, anxiety-provoking feelings and the individual is likely to drink to escape the unpleasantness; they also suggest that aversion therapy has had the worst results of all forms). Psychotherapy broadly construed can take a number of forms: it can be directed to a group or to individuals one at a time. It can concentrate on eliminating unwanted overt behaviours and bolstering desirable ones (behaviourist), on advancing the personality development of the client to the point where he can handle his problems through effective understanding of their roots (the psychodynamic therapies), or on dealing with specific problem situations or sets of situations in the person's life (reality therapy). The choice varies not only with the investigator's orientation but with his understanding of the causes for the drinking-driving problem, his perception of the best point of attack for that problem, and questions of ethics, resources and practicality some of which are alluded to elsewhere in this report. Much psychotherapy is relatively long-term in prognosis, reality and aversion therapies much less so. The fact that problem drinking drivers are largely drawn from the lower socio-economic classes is not a good prognostic indicator for the insight therapies, which depend on the person's willingness and ability

to articulate things. Court procedures have usually been to refer people on conviction for a four-to-twelve week period pending sentence which has put a ridiculous time-limitation on any attempt at psychodynamic therapy. As a result, some recent programs have abandoned the attempt: the Santa Monica Program (Sackman, et al) has "optional ongoing counselling" which few enrollees utilized.

Some of the ASAP Programs (e.g., Fairfax County, Virginia) have adopted a procedure which seems sensible in the light of possible different sub-populations with varying needs within the impaired driver group: as part of their initial intake procedure they send court-referred clients through a community mental health centre for diagnosis. From there, individuals are streamed into varied programs, one of which includes relatively long-term counselling or therapy. In this context it's worthwhile to consider for a moment the implications of utilizing existing services for specialized long-term therapeutic needs, as did the Fairfax County Program, or setting up a particularistic service with its own specialists. The advantage of the former is the saving in expense and the concomitant availability of a much wider range of specialists and services than any special program could hope to provide. Advantages of the latter are the possibility of gearing an integrated program to the more specific needs of the drinking driver and avoiding the stigma sometimes attached to existing "helping" institutions, something which might turn out to be a very important factor with involuntary, court-referred patients. There has been some evidence indicative that group therapy is more efficacious with alcoholics than individual therapy (Joscelyn, et al)

and almost as a logical consequence of this a number of programs have utilized the group-centred, mutually-supportive ex-drinker organization Alcoholics Anonymous as a support or referral resource. This organization which (to describe it in abstract general terms) seeks to resocialize the individual away from drinking claims a high success rate, but it does not permit the kind of research which could reveal who it succeeds with and why.

(iii) Driver Re-Education and Counselling --

The group milieu is also used in a number of short duration classroom courses on drinking-driving and alcoholism the inspiration for which was the Phoenix Program of Arizona. These courses seek to impart information about alcohol's effects on driving, its contribution to serious crashes, the signs of problem drinking, etc., and allow the individuals through objective testing and self-report to determine their own best approach to avoid drinking and driving again. Stewart and Malfetti report that the group atmosphere loosens inhibitions and the "students" freely question the lecturers and talk relatively openly about their own experiences. Although therapeutic referrals are usually offered on a voluntary basis for those who want them, education is the basic aim of there programs, with the individual expected to take the reponsibility for requesting further help if he feels he need it. This last assumption, the limited duration (Phoenix uses 4 two and one-half hour lectures over a one month period), the confounding effect of social desirability (individuals are aware that the court is awaiting notification of satisfactory completion before passing sentence) and the lack of differentiated sub-programs are

some of the criticisms which can be levelled at these efforts.

(iv) Miscellaneous --

A Regina pub has installed a breathalyzer which patrons can utilize to see whether they are able to drive home or should find other means of transportation, and the Toronto Star (Dec. 14/72) comments that the Saskatchewan government is considering installing one in every bar so that patrons will not be served if they register over a certain limit. While a breathalyzer might even enhance business at a single bar where it would be an attraction in itself, it seems unlikely that bar managers in general would want them on their premises. Further, it seems grossly offensive to compel anyone who enters a bar for a drink to submit to what is after all an operation with humiliating connotations, and there is further the question of whether the relatively small percentage of high-risk drivers who do their pre-driving drinking in public facilities justifies it.

Another suggested plan of attack is the "enlistment" of non-professionals in the sense that bartenders, hairdressers, waiters, apartment building superintendants, doctors, etc. be informed of the signs of problem alcohol and be encouraged to "have a talk" with anyone whom they came to suspect was a problem drinker, or give them a discreet letter outlining these signs and offering help from the various available facilities. It would seem that something like this done spontaneously by one individual for another with whom he has an established relationship might work at times; to encourage it as a general rule for people with no attained or personal qualifications which would ensure that it would not be misused conjures up 1984-ish nightmares, not to mention the fact that social

relations being what they are, it might be expected that (1) the supposed "helpers" would not do it, and (2) if they did the suspected drinkers would be likelier to end their relationship than their drinking.

(v) Combination Therapy --

A number of researchers (Joscelyn, et al, Fox, and Waller) suggest that since no single method has proven to be unequivocally successful with alcohol problems, the problem drinking driver should be treated by way of a variety of methods, used in sequence or conjunction as effective. Thus, the convicted DWI's,potential DWI's or whoever constituted the target population would be streamed according to the particular stage or level of drinking and/or drinking and driving problem they presented and passed on to an appropriate sub-program utilizing the appropriate set of educational, treatment or counselling procedures. For example, compulsive drinkers within the group might start on disulfiram to keep them "dry" and then receive a variety of therapeutic assistance, whereas one-time-only offenders might only need a modified version of the Phoenix Program. It looks at this point as if the complexity of the drinking driver situation makes this combined approach the most likely one to achieve satisfactory results.

Evaluation of Drinking Driver Countermeasures

A. Pitfalls:

How do you know if your program is working? The answer to this question varies with the type of program, level of approach, and intended goals. A generalized educational program, for example, might use as indices a comparison between public attitudes before and after the

program, and perhaps a similar measure of change in self-reported social drinking and driving practices; there might quite realistically be little expectation of a direct effect on the incidence of problem drinking and driving. Immediately obvious is the fact that is is a lot easier to evaluate any kind of generalized campaign, educational, enforcement, or whatever, than to evaluate a specific program for DWI offenders. For one thing, it is hard to justify reliance on recidivism rates as these are normally quite low, not only because of the low probability of getting caught on any given repitition of the DWI offence but also because court and police records are notably inefficient at providing accurate, comparable information (Stewart, Malfetti, et al, pages 166-168). As a result, evaluators have had to rely on self-report, clinical judgement and more or less objective tests of changed knowledge, attitudes and plans for changed behaviour. The difficulty with this is that the subjects are quite aware of the baleful eye of the court looking over their shoulder, and there is thus a strong "social desirability" motivation which could either cause them to cynically "fake" their responses, or to ascribe genuine alterations of attitude to the need to please the court rather than to the objective validity of the changed position. Since most such programs are constrained by the availability of resources and the number of problem drinking drivers requiring their attention to be time-limited, there is also a large voluntaristic element built into them in that the individual has to request long-term or specialized assistance, which means that negative results might be due not to the inefficacy of the program but to the lack of a continuing directed setup. Lastly, the fact that

there may be more than one sub-population of DWI's means that unless the investigator is confident that he has isolated all the sub-populations and directed appropriate measures towards each of them, the existence of these differences could confound the program results.

Rather than concern itself with such intricacies an enforcement program has only to address itself to such simple questions as: have the number of alcohol-related accidents, especially fatalities, decreased since the program was instituted? Are the number of alcohol-and-driving arrests significantly up? Is the rate of convictions for liquor-related traffic offences increased as a result of tightened legislation, etc. In actuality only two of these indices, fatalities and rate of conviction, are as simple as they look; an increase in drinking-driving arrests may simply mean that more of the cases which come to the attention of the police are culminating in arrest: this may or may not have a direct relationship to actual rate of occurrance. There is also, hovering in the background, the question of whether a reduction in fatal accidents and the presumed reduction in problem drinking and driving from which it follows is enough: are these people simply manifesting their alcohol-related self- and other-destructive behaviour in some other way, e.g., violence? One last general comment: before a program can be evaluated, before it should be established in the first place, there should be a very clear idea of the baseline from which it is operating: this means actual incidence, visible incidence, attitudes of relevant groups, practices of relevant groups relating to the situation, their knowledgeability, etc. With these rather intimidating cautionary points in mind, we turn to look

at existing programs and their evaluation.

B. Existing Programs:

Phoenix -- Via the use of lectures, films, objective tests, discussion and self-report this pioneering re-educational effort seeks to "provide information on the consequences of drinking and driving and to consider why people drink and drive, and what countermeasures they can take. The course is not intended to stop people from drinking -- such a person has to make his own decision on the matter. However, it is concerned with drinking and driving and the problems caused by this combination. The sessions are conducted in a way which encourages a participant to analyze his own drinking habits against the opinions of his peers and those of the instructors, and to examine ways in which he might modify the behaviour which brought him to the court" (Stewart, Malfetti, et al, 1971). Until recently, there were no attempts at sophisticated evaluation of the course. In the 1971 study which sought to rectify this, the investigators found that as a result of taking the course 20% of the students were seeking voluntary counselling as compared to 2% when they began. Changing attitudes were evaluated at the end by giving participants part of a "Behavioural Description", and the whole of a DWI Knowledge Inventory and Drinking and Driving Opinion Survey which they had filled out on commencing the course. The evaluative study seemingly was just at the stage of standardizing research instruments, forms and record-keeping, so that there is little in the report about findings. Recidivism rates were tested by ex post facto comparison of the driving records of the first 500 persons convicted of DWI who went through the

course with 500 convicted on the same charge at about the same time who did not take it. The groups were matched on age, sex, and "race", and driving records were searched for three years before and after the conviction. The inspectors' contention (pages 176-177) that the control and experimental groups for conviction data were not significantly different in any meaningful respect is not totally satisfying; further, as the investigators themselves point out, the records on which these data are based are deficient. The findings on the whole indicate that course enrollees were to a small but significant degree, likely to have less subsequent DWI citations and convictions and less points. "The three year post conviction annual recidivism rate for DWI convictions was: experimental group - 7.94%; control group - 10.43% (op. cit., page 180)"; the number of persons in the experimental sample with post-baseline DWI convictions dropped to approximately 24% pre-baseline levels, while the comparable figures for the control sample was approximately 31% (op. cit). It seems reasonable to say that the program is somewhat effective; the researchers are just now in a position to begin answering the next necessary question: is it more effective with certain kinds of people, and if so, what kinds?

Alberta -- Much like Phoenix, with the difference that there are more directed referrals for a) those who have a series of repetitive problems related to the over-use or misuse of beverage alcohol , and b) those who have repetitive driving infractions and problems" (Strachan, 1972). This effort is just now being evaluated, under the direction of Dr. Paul Zelhart of the University of Alberta, Department of Psychology.

The British Road Safety Act of 1967 -- This will serve as our prototype of the tough enforcement stance as it seems to embody all the essential elements: tight laws, well enforced; highly visible roadside testing; well-publicized campaigns against drinking and driving; heavy penalties. The overall effect, then, is a high perceived subjective probability of being stopped, tested, arrested, convicted, and subjected to a licence suspension and/or a heavy fine. Driessen quotes an unpublished report by Ross showing a dramatic decline in injuries and fatalities after introduction of the Act; Roberts points out (page 447) that convictions for drinking and driving rose by 7%. Ross finds that the offence rates are now edging up again, suggesting that this is due to the difficulties of detecting the drinking driver and to administrative problems within the legal system. Pertinent to this point, it can be argued that (1) the rates remain somewhat below the level reached before the Act, which means that despite the decline it is still saving lives and (2) perhaps the decline in effect can be offset by a renewed publicity and enforcement effort, e.g., you would expect a decline after a few years as new drivers to whom initial publicity was not pertinent begin to drive. It seems a fair statement of the situation to say that this method, at least at peak force, is quite effective. It is not a total answer, it is expensive both financially and in terms of police-public relations, and it does not effect what the person does other than drinking-driving. Driessen (page 12) quotes Little to the effect that it may be only the social drinking driver and his contribution to the accident total which is reduced by measures such as this one. There does not seem to have been any research on that question for those accidents occurring in Britain since 1967.

A.S.A.P. -- In early 1970 the National Highway Traffic Safety Administration initiated the first of 52 planned comprehensive community programs to deal with the drinking driver. These Alcohol Safety Action Projects utilize multiple approaches. They identify problem drinkers through improving quality and use of extant institutional and agency data and enforcement and to co-ordinate court, police, licencing and the various treatment efforts to that they began to operate as a functioning system. The general aims of these programs are the reduction of driving after excessive drinking, the reduction of drinking to safe levels, and the evaluation of the effectiveness of all countermeasures taken (Driessen). Some of the projects utilize interesting innovative concepts: New Orleans, for example, has detailed a specially trained detachment of police to provide tough enforcement, and has somehow interested some of the most influential newspaper columnists and broadcasters in the city to provide them with free publicity, enlisted the help of entertainers such as James Brown to get their message across, set up a free breathalizer testing van on Bourbon Street and offered a free taxi ride home and a police officer to return the cars of those with high positive ratings.

One of the unfortunate aspects of the innovativeness of some of the ASAP programs is that since not all do the same things,[10] it will be difficult to determine if differential results are due to the varying procedures or to differences in the target population in the various communities. Driessen reports preliminary results for eight of the

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[10] e.g., The Virginia Program streams convicted DWI's sending some through their program and others to appropriate diagnostic and treatment facilities, the New York program apparently sends all convicted DWI's through the same program.

projects over the first nine months of operation. There is a statistically significant overall reduction in the number of fatal accidents and fatalities, and DWI arrest and conviction rates are up in ASAP areas. However, much of the success in relation to accidents is attributable to particular projects, especially Oregon. So far, considerations on a cost-effectiveness basis suggest that the ASAP Program is justifying itself, and it is hoped that the promised imminent evaluations for 1972,which would include those programs started in 1971 and a large number of new ones, will add some light on whom it works for, where, and how.

Santa Monica -- This was supposed to be a prototype for ASAP programs and as such examined the effectiveness of "intake" and "debriefing" interviews for people entering the DWI course, voluntary individualized counselling, group therapy sessions conducted by a professional or paraprofessional, class retraining and driver education sessions, and crisis intervention in the form of hot line/driver assistance services. The researchers conclude that:

> "Individual counselling and class retraining were successful in meeting program objectives; standardized initial and exit interviews appeared to be the most cost-effective forms of counselling; group therapy results were generally favourable but problematic in some aspects; class retraining was universally approved by the participants; crisis intervention techniques were not found to be cost effective. " (Sackman, et al, summary)

All in all the research design of this project was questionable. The measures of effect were all self-report (subject to social desirability) and counsellors' reports (the indices which the counsellors used are not provided). The subjects were chosen in rather peculiar fashion: people convicted of DWI were given the choice of paying a fine or taking the program. The authors recognize

that this creates a biased sample, but it is not clear how the bias would operate. The objectives were irrelevant or badly defined, e.g. "effective counselling" is interpreted to mean a satisfactory introduction to the program and a similar "debriefing" session; most people would have utilized a term other than "counselling". In the morass of questionnable conclusions, several stand out as quite plausible: the idea of providing a "hot line" for DWI's in the program to call if they want to discuss an immediate crisis situation does not seem to work (it would seem that a problem drinker would have to have progressed to a stage of considerable insight before he would be willing to avail himself of so obvious a suggestion that he cannot handle his own problems) nor does providing them with slips redeemable for taxi rides home (this paternalistic gesture would seem to offset the basic thrust of the whole program, which is to get the person to exercise his own responsibility to not combine drinking and driving).

The European Experience -- Worth mentioning for their implications regarding the British system are some figures quoted by Driessen from other countries which use tough laws which are widely publicized and strictly enforced (for example enforcement in Sweden is not only strict but highly visible -- they use road blocks). "In Norway in 1968, 15% of all fatal traffic accidents were caused by drinking drivers. In Sweden the figure is 10 to 11%" (Driessen, page 13). Compared to the American figure of 50%, these figures are greatly impressive testimony of the efficacy of the enforcement system, at least in those countries, with the priviso that Driessen does not offer any detailed information on the testing procedures used and whether these are uniform; it may be remembered that the conception of alcohol's contribution to driving fatalities in the States was much

lower than the reality until the introduction of systematic testing procedures.

Establishment of Baseline Data:

As discussed elsewhere in this report, there is a need to co-ordinate both the efforts and record-keeping of a broad range of organizations concerned with the drinking driver, but there exists no prototype study on how this might be done; perhaps the publication of detailed reports of the ASAP work will provide something about this, as it is one of ASAP's aims. Worthy of mention, however, are two studies which deal with establishment of a baseline regarding information, information sources, drinking and driving practices, etc. of a number of relevant "publics" (Waller, et al, 1972) and move on to determine the best way to convey information, in this case to specialist groups (Borkenstein, et al, 1971). The Waller study makes the Grand Rapids effort appear hopelessly uninformative in terms of the range and quality of data gathered in a roadside survey (to be fair about it, the aims and circumstances of study were very different) while the Borkenstein group found that a "drinking party" with periodic interludes at a Breathalizer was the most potent form of education, especially if supplemented by pamphlets and a lecture.

Research Questions Remaining in the Impaired Drivers Program:[11]

If the cumulated research to date on the impaired driver has a single "message" which anyone familiar with the question would be likely to accept, that message is that: this problem is one of such complexity

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[11] We're dealing here with the question from an "applied", practical point of view, i.e. what research do we need to institute a program to cut down on impaired driving, rather than from the desire to advance theoretical knowledge about some particular aspect, which could require a different set of research priorities.

and the factors influencing it are so numerous and multi-faceted that extrapolations from generalized conclusions to cover most aspects of the impaired driver problem in any given country, region or community must be carried out with great caution. There are too many intervening variables. This makes it easy to state the research steps required before a particular program can be established, although carrying them out would be a rather more formidable task.

(1) What is the real incidence of impaired driving in the given community (region, country) -- roadside surveys, although expensive and time-consuming, seem the method of choice here.

(2) What is the recorded incidence? -- this question is not a straight-forward one: it probably requires participant-observation of police field practices and court room procedures, study of the official policy of the police and the pertinent laws, co-ordination of record-keeping between the various interested agencies and institutions. Related to this question, how do drinking-driving offences and especially crashes distribute themselves in terms of the geographical layout of the given community?

(3) Pertinent informational, attitudinal and demographic baselines for the community in question -- how much do various publics and concerned "officials" actually know about the effects of alcohol, specifically on driving; what are the community mores regarding drinking, and drinking drivers; how is the community composition of age, ethnic, subcultural, contracultural and social class groups related? -- this might involve roadside study (a la Waller) or some form of survey research; a study of census tracts; a study of those convicted of DWI or fatally

injured in alcohol-related collisions for which they were responsible.

(4) Can the interested agencies, government bodies, etc. find a basis for agreement on co-ordination of efforts? Can the necessary financing, research facilities, consultants and other resources be generated?

(5) The next requirement is a coherent answer to some of the practical and philosophical questions raised on pages 40-44 above; this answer would be informed not only by interpretation of the literature in general but by the specific empirically-discovered situation in the given community.

(6) Probably beyond the scope of any single research project but some extremely handy information to have would be: why have similar programs in different areas shown quite different results, e.g. the Oregon ASAP; do any of the programs achieve better results than spontaneous remission, which does occur;[12] and, in any case, are the individuals who change as the result of a program the same ones who would spontaneously remit? These questions, unfortunately, are not likely to be answered in the foreseeable future.

With this as a basis it would be possible to design a program comprehensive both in the sense of approaching the impaired driver problem in however many ways it must simultaneously be approached for maximal chance of success, and in the building-in of evaluation measures of the totality of the program and of its component parts. It should perhaps be mentioned that the above suggestions are oriented towards the finding

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[12] Many chronic problem drinkers cease driving in middle age of their own accord.

of an "ideal" solution; cost-effectiveness or other considerations might make it necessary to settle for goals which are somewhat scaled down, and it would probably be quite feasible to do so, e.g., an enforcement program strictly construed would require detailed study only of police and judicial practices and perhaps the law, without much regard to characteristics of offenders; a Phoenix-type program with a high probability of success could probably be instituted to rehabilitate the middle class problem drinker who has not yet reached the final stages, etc.

Program Recommendations

A. Program:

This section assumes that the research requirements discussed in the last section, the establishment of baseline information and the eliciting of co-operation of government, police, insurance and other relevant institutions are being fulfilled. It also takes for granted that the program is seen as a tentative outline rather than a rigid framework, as it is based on the American situation. It may turn out that in practice significant alterations are required.

The program proceeds in two main stages, with the courtroom acting as a bridge between them. The first can be summed up as a dramatic, highly publicized campaign of enforcement. Just how much has to be done will not be apparent until we know more: it may be that the official stance, the practices of individual officers, the "tightness" of relevant laws, etc. regarding impaired driving are already satisfactory here, in which

case the only thing we might need would be a geographical breakdown of impaired driver arrests and accidents. This would allow for the creation of a special police squad with particular training in the recognition and handling of impaired drivers and a mandate to patrol high-incidence areas after the New Orleans ASAP model. The news media would presumably find this of interest, perhaps to the point of keeping a running tally of arrests. The squad could operate in a preventive as well as punitive fashion, e.g., a highly extroverted officer giving free tests with a Breathalyzer at Yonge and Dundas on a Saturday night.

The "Bridging" stage, the courtroom, is next. At this point, the judge will suspend the sentence of every sixth person convicted of a liquor related traffic offence pending that person's assessment by our program staff. As some 600 people come up before the downtown Toronto impaired driving court each month, and most of these plead guilty (under Section 236, Criminal Code of Canada), we would have a pretty broad population to work with. The assessment would be a composite of findings by a psychiatrist, a clinical psychologist and a psychiatric social worker and would utilize interviews; self-report regarding drinking; drinking-and-driving, personality and life history scales of proven efficacy; and a search of police and social agency records. On the basis of the assessement, the assessment group will be able to report back to the court that the given subject manifests: (1) pathological drinking but otherwise relative adjustment; (2) social or psychological pathology; (3) a virility-seeking masculine sub-cultural role; (4) the characteristics of a one-time only offender; (5) any other category that reveals itself in the course of the

research. Subjects from across all categories could be randomly assigned to either: (1) an educational program using lectures, films, group discussion and self-revelation instruments to utilize the individual's own sense of awakened responsibility to avoid repitition of his drinking-and-driving behaviour; or (2) the regular court disposition. You will thus have 100 people sent for assessment each month, half of which will simply receive regular court disposition after a one month period, the other half will be randomly assigned to one of two classes. Classes will be held once a week for four successive weeks, on a weekday evening; the two classes meet on different evenings, allowing people to make up missed sessions. Each class will thus have approximately 25 members. The course will meet on a weekly basis for the first three months only; the idea here is to allow lecturers plenty of time to gauge the comparative utility of different materials and approaches, and to make the indicated adjustments in the program. After that time, it should be possible to run for an additional 3 months holding two sessions in a week, thus doubling the number of individuals handled by the program. At the end of six months, then, approximately 450 individuals will have gone through the educational program, a sufficient number to allow evaluation.

B. Evaluation:

The program as designed allows comparison between: (1) the baseline, no-program rate of reported recidivism;[14] (2) blanket educa-

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[14] Ideally, this would be gathered from three sources: Self-report of a population of convicted DWI's; self-report of drinking drivers found in a roadside survey; search of police and court records of recidivism.

tional treatment; (3) assessment and court disposition only; (4) regular court disposition at time program exists and is being publicized. Cross-cutting these different conditions, the program design also allows for comparison of efficacy not only for the different types of subjects this report has postulated exist, but also by any psychological or sociological characteristic or constellation of characteristics which suggest themselves as pertinent.

The enforcement measures could be best assessed by comparing against baseline data: (1) number of alcohol-related traffic arrests; (2) number of alcohol-related accidents, particularly percentage of alcohol-related fatalities; (3) self-report of drinking and driving and measured B.A.C. levels of drivers stopped in a roadside survey.

The program measures would be evaluated in several ways:

(1) police and court records of incident and conviction recidivism; (2) self-report, comparison of scores on the objective tests before and after program,[15] judgement of the involved educators and, where applicable, psychiatrists, psychologists, case-workers. (This assessment would take place not only immediately after the program finished, but an interview and re-test would take place at intervals of 6 months, one year, two years, three years after the program).

(3) For a small sub-group across the varied program, no-program and kind-of-program categories, another, less obtrusive device could be employed. One of the items on the self-report forms filled out by the

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[15] These tests would be the best of those currently available. They would probe drinking habits and problem drinking, psychopathology, driving record, the standard sociological, life history and personality variables, offence record and contact with social agencies.

subjects on first entering the program for assessment would elicit their drinking-and-driving pattern, where and when they habitually do it -- e.g., "go for a few after work" or "hit the downtown bars Saturday night". This could be compared against the time of their arrest to provide some verification of it. There will likely be enough of the population who are patterned drinking drivers in this sense to allow for the drawing up of a schedule for unobtrusive observation at the various designated time intervals after program completion.

Enforcement --

This part of the program would necessitate providing specialized training on alcohol, drinking drivers, testing devices, etc., to a special squad of police officers. It would be limited in duration, probably would require presentation of medical, psychological, technical (i.e., testing machinery) aspects in a short, intense course. Probably the New Orleans police force would be happy to provide a model for the way they went about it.

C. Assessment -- Resources Required

This would probably be done at A.R.F. by staff; whether or not it would require additional staff would depend on the workload carried by assessment staff from other sources, and the size of the sample. In view of the needs of baseline research, the program itself, plus long-term follow-up, it might be advisable to designate specific staff to handle this project in its entirety. Testing instruments can probably be chosen from the large variety, some quite good, already in use.

Treatment --

The education program would seem to best fit into the flexibility and atmosphere of a community college setting. Assembling the curriculum and doing the actual teaching would be the task of a panel of specialists, already employed by A.R.F., Forensic Sciences, Department of Transportation, etc. -- skills in effective communication with different types of groups and individuals, in addition to technical expertise, would be required of the actual teachers. Again, materials could likely be found from among already existing resources.

D. Further Development of The Survey:

At this point in the program, enough people will have passed through it to allow a further refinement: the evidence strongly suggests the existence of sub-groups within the impaired driver population. There is a large group of first offenders who are unlikely to get into trouble again, and for whom the program as described is presumably appropriate; there is also a group of people at various stages in a career of problem drinking, some younger drivers for whom drinking and driving is an expression of masculinity and some drivers whose drinking and driving behaviour is an acting-out of psychopathology unrelated to problem drinking. At this point, then, we can hopefully differentiate between these and any other important sub-groups at the assessment stage and "stream" them into appropriate variants of the program. Thus, assuming the sub-groups in the Toronto impaired driver population are as stated, the variants of the basic program would combine the educational component with:

A) treatment for problem drinking -- this would be provided at A.R.F. through present facilities such as the Clinical Institute, and would utilize combination therapy techniques (e.g. disulfiram plus group therapy plus individual counselling.)

B) treatment for psychopathology -- this would best be conducted at an institute already designed for that purpose, if one fully staffed with highly competent clinicians, psychiatrists, social workers, etc. could be found; if not we might have to create our own setting. Within a broad framework, the treatment here would be geared to the particular individual rather than pre-set.

C) As the drinking and driving behaviour of young, varility-seeking males probably stems from their particular sub-cultures definition of masculinity, the treatment of choice would seem to be referral to a good street-worker program which would subtly and painlessly expose them to different life-styles and the avenues they open, especially to an alternate form of masculinity which is more balanced, less likely to get the individual into trouble and which offers more diverse rewards then the one to which the individual is accustomed. This area of the program would probably best be handled by a functioning drop-in centre, street-worker program (e.g. Toronto General Hospital's youth workers).

The duration of these longer term specialized treatments could not necessarily be pre-determined, but it does seem reasonable to suggest that, for evaluation purposes, a given period of time could be considered a sufficient test of the treatment's efficiency regarding cessation of drinking-and-driving only; this would have to be determined in consultation with those responsible for carrying out each program.

Over the long-run then, we will be able to compare the baseline of drinking and driving incidence subject to the regular court disposition with (1) a blanket educational program, (2) educational program plus adjunct specialized programs for appropriate sub-groups, (3) assessment only plus the regular court disposition, (4) regular court disposition only, at time of highly-publicized program. This approach will hopefully be broad and diverse enough to indicate whether the education-treatment approach to this problem can achieve satisfactory results, or whether some other is required.

APPENDIX

The Law Pertaining to Impaired Driving

The legal situation pertinent to impaired driving in Canada is complex and fast-changing. Both Federal (Criminal Code) and Provincial (Highway Traffic Act) legislation at present apply. The basic Criminal Code Sections are 234, which prohibits "Driving while ability to drive is impaired", 235 "Failure or refusal to provide sample of breath where (there exists a) reasonable belief of commission of offence under Section 234", and 236, "Driving with more than 80 mgs. of alcohol (per 100 millilitres) in blood". Other sections clarify technicalties and terminological intent of these three. Section 236 only came into effect in 1969, replacing a section which prohibited drunk driving on pain of an automatic jail term. Since its inception, there are a lot more guilty pleas, as people who feel they can contest the ambiguous "impairment" do not feel they can argue with a machine which automatically and accurately records their alcohol level. The exigencies of big city plea bargaining leave Crown Attorneys willing to settle for a plea of guilty to driving with more than 80 mgs. rather than pressing for a conviction for impairment. In effect, the penalties for a first offence on Sections 234 and 236 are the same, and it is only on recidivism that 234 impaired may be punished more severely. At this point in time a somewhat peculiar situation prevails. The Highway Traffic Act of Ontario (Sections 20 and 21) provides for a mandatory suspension of licence for anyone convicted of alcohol-related or other criminal code offences involving motor vehicles. But new sub-sections to Section 238 of the Criminal Code of Canada allow the judge to "make an order prohibiting him from driving a motor vehicle

in Canada at all times or at such times and places as may be specified in the order". This federal law, which broadens considerably the judge's discretion, (e.g., he can order an "intermittent prohibition", which allows the person to drive during business hours but at no other time rather than suspend privileges entirely) in present practice supersedes the provincial statute only if it is invoked; in other words, the judge has to specify that he is ruling under the Criminal Code to eliminate the applicability of the automatic suspension which the provincial legislation carries. It may be that as precedents come to be set the provincial law will be withdrawn entirely, as the federal one covers the possibility of suspension and includes others as well.

Other pertinent information: Suspension of licence is regarded as so serious a deprivation that a person subject to this penalty is allowed to appeal to the County Court, in which case he automatically receives a "de novo" trial, i.e. the entire case must be proved again, as opposed to an ordinary appeal which centres on the adjudication of particular pivotal technicalities. Since the appeal court does not sit constantly, there is a tremendous backlog of cases, so that the person in effect has four to five months grace (during which, of course, he can drive) and he may also obtain several remands. This can put off the penalty for up to 18 months.

While technicalities do allow a number of people who are obviously guilty of impaired driving to escape conviction, this is more the result of inadequate preparation due to the heavy case load which big city crown attorneys carry than to inadequacies in the law, and the numbers involved

are more than offset by the number of people pleading guilty to "more than 80 mg."[1] While the law obviously implies otherwise, it is apparently an "uphill battle" for a Crown Attorney to get a conviction for impaired driving on a Breathalizer reading below 15 mg.; when the reading exceeds 15, the unofficial balance shifts and it becomes difficult for the defence attorney to get a dismissal.

Previous convictions are checked by examination of the files of the Department of Transport, which cover the previous five years. If the Crown offers "strict proof" of previous convictions for a person found guilty of impairment, a jail sentence is mandatory under the law. The Crown, however, has a good deal of leeway: he can, for example, bring a prior conviction to the Judge's attention but specify that he is not demanding strict proof, i.e. Department of Transport Record and the testimony of the arresting officer. He also, in theory, has the option of proceeding by indictable offence, which would satisfy future "strict proof" requirements completely in that it permits the police to fingerprint the accused, but in practice the Crown is ruled by his perception of public distaste for this procedure and hence prosecutes the case as a summary conviction, which does not allow fingerprinting.

Judges, it appears, do not like to send recidivist impaired drivers to jail, as the law requires: almost all Toronto judges on sentencing such a person give them the absolute minimum sentence, fourteen days.

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[1] This and the other statements in this paragraph and the following are the impressions of Mr. Chasse of the Attorney General's Office, Toronto (personal communication).

Implications For Program:

If, as seems likely, Section 238 of the Criminal Code comes to completely replace the Highway Traffic Act's provision for mandatory licence suspension, Judges will have a great deal of leeway regarding the terms they impose prohibiting driving and they could exercise this option by granting limited driving privileges to those convicted drivers who agree to participation in the program. Even under the Ontario provision, the Judge has the option of granting limited privileges for the second half of the suspension period, providing no personal injury was involved in the DWI incident.

The chances of eliciting co-operation seem particularly good in the case of recidivist impaired drivers, assuming that Crown Attorneys could be convinced of the merits of the program; it would likely be more difficult to persuade judges and Crown Attorneys of the merit of program participation for first offenders.

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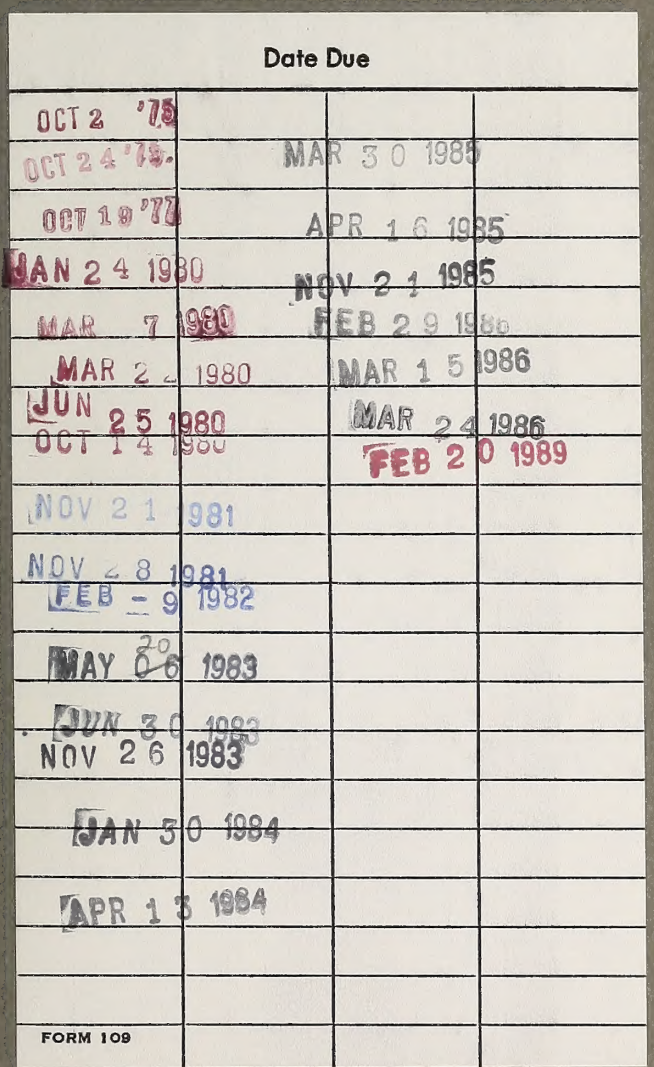

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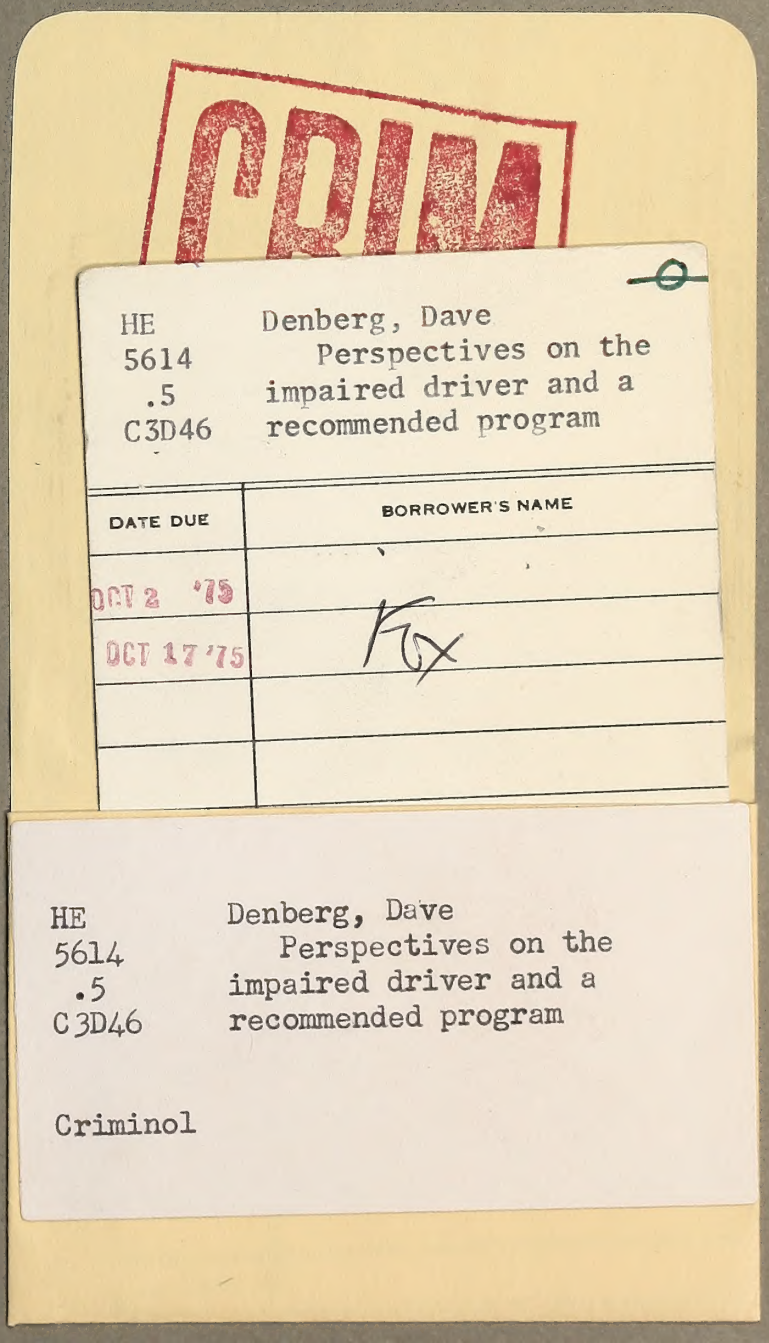

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